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RADIO RELAY EQUIPMENT REPAIR CAREER LADDER AFSC 304X0.(U)
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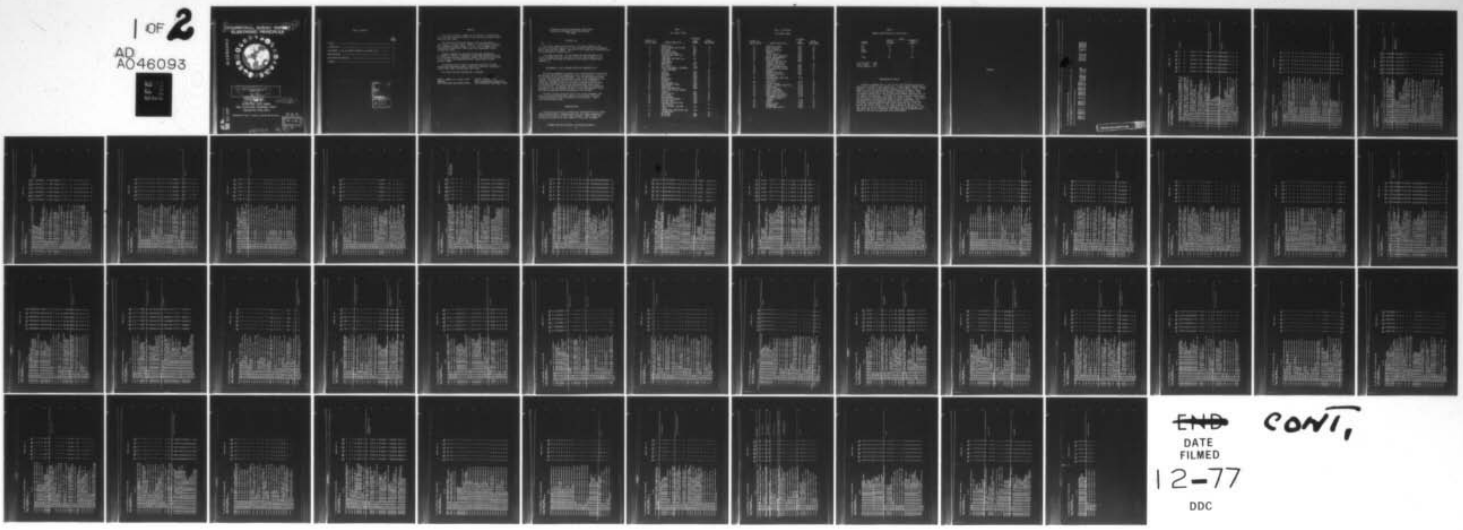

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OCCUPATIONAL SURVEY REPORT.
ELECTRONIC PRINCIPLES

RADIO RELAY EQUIPMENT REPAIR
CAREER LADDER

AFSC 304X0.

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OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

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PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Radio Relay Equipment Repair Specialty, AFSC 304X0.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Captain Thomas E. Ulrich. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
USAF Occupational Measurement Center

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USAF Occupational Measurement Center

ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT
RADIO RELAY EQUIPMENT REPAIR CAREER LADDER
AFSC 304X0

INTRODUCTION

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned to Radio Relay Equipment Repair Specialty (AFSC 304X0). The data for this report were collected during the period February through May 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands.

DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 30450 airmen worldwide. Responses from 1163 individuals represented 61 percent of the total of all AFSC 30450 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

TABLE 1

EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C128	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E294	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	0845	30
44	PULSE MODULATION SYSTEMS	0875	31
45	ANTENNAS	0914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

TABLE 2

COMMAND REPRESENTATION OF SURVEY SAMPLE

	30450	
COMMAND	PERCENT ASSIGNED	PERCENT OF SAMPLE
AFCS	74	68
TAC	12	11
USAFE	6	7
OTHERS	8	14
TOTAL	100	100

Total Assigned - 1906
Total Sampled - 1163
Percent Sampled - 61%

PRESENTATON OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the six selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Soldering (pp. 11-12), FM Systems (pp. 24-25), Relays (p. 12), Power Supplies (p. 19) and Filters (pp. 10-11) to low in areas such as Counters (p. 27), Infrared (pp. 41-42), and Lasers (pp. 42-43). Additional AFSC 304X0 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).

APPENDIX

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS GPSUM1 PAGE 1

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS
IN THE 304X0 CAREER FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY = SPC001	ALL AIRMEN DAFSC 30450		CONTAINING	1163 MEMBERS.
GROUP IDENTITY = SPC002	ALL AIRMEN DAFSC 30450	STATIONED IN CONUS	CONTAINING	535 MEMBERS.
GROUP IDENTITY = SPC003	ALL AIRMEN DAFSC 30450	STATIONED OVERSEAS	CONTAINING	606 MEMBERS.
GROUP IDENTITY = SPC004	ALL AIRMEN DAFSC 30450	ASSIGNED TO AFCS	CONTAINING	787 MEMBERS.
GROUP IDENTITY = SPC005	ALL AIRMEN DAFSC 30450	ASSIGNED TO TAC	CONTAINING	132 MEMBERS.
GROUP IDENTITY = SPC006	ALL AIRMEN DAFSC 30450	ASSIGNED TO USAFE	CONTAINING	86 MEMBERS.

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
A	1	A1-01 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10.	72	62	80	70	77	81	MATHEMATICS
A	2	A1-02 DO YOU USE PUBLICATIONS, SUCH AS A TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB.	42	36	47	43	44	48	
A	3	A1-03 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS.	43	38	48	42	36	47	
A	4	A1-04 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY.	21	20	22	21	14	20	
A	5	A1-05 DO YOU SOLVE FOR UNKNOWN QUANTITIES.	37	33	40	37	26	37	
A	6	A1-06 DO YOU CONVERT NUMBERS TO LOGARITHMS.	25	14	34	29	11	17	
A	7	A1-07 DO YOU USE LOGARITHM TABLES IN ANY TYPE OF CALCULATIONS.	27	16	37	32	11	19	
A	8	A1-08 DO YOU SOLVE QUADRATIC EQUATIONS.	10	10	9	9	9	8	
A	9	A1-09 DO YOU USE THE NATURAL SYSTEM OF LOGARITHMS.	11	6	14	12	5	5	
A	10	A1-10 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES.	9	8	10	9	6	12	
A	11	A1-11 DO YOU WORK WITH TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT.	12	11	12	13	8	6	
A	12	A1-12 DO YOU DETERMINE AREAS OF PLANE FIGURES.	5	6	4	5	4	7	
A	13	A1-13 DO YOU SOLVE OR USE SIMULTANEOUS EQUATIONS.	6	6	6	6	7	7	
A	14	A1-14 DO YOU SOLVE OR USE PROPORTIONS.	22	19	26	24	17	20	
A	15	A2-01 DO YOU USE THE TERM VOLTAGE OR VOLT (V).	92	87	96	91	92	97	DIRECT CURRENT AND VOLTAGE
A	16	A2-02 DO YOU USE THE TERM ELECTROMOTIVE FORCE (EMF).	27	28	26	26	26	22	
A	17	A2-03 DO YOU USE THE TERM OHM.	90	84	95	89	92	95	
A	18	A2-04 DO YOU USE THE TERM ION.	10	12	8	9	9	8	
A	19	A2-05 DO YOU USE THE TERM DYNE.	4	5	4	4	5	3	
A	20	A2-06 DO YOU USE THE TERM AMPERE.	87	82	92	86	89	92	
A	21	A2-07 DO YOU USE THE TERM NEUTRON.	10	11	10	9	9	7	
A	22	A2-08 DO YOU USE THE TERM COULOMB.	13	15	12	13	13	5	
A	23	A2-09 DO YOU USE THE TERM PROTON.	10	12	9	9	9	6	
A	24	A3-01 DO YOU WORK WITH RESISTORS IN YOUR PRESENT JOB.	78	74	81	77	83	77	RESISTANCE
A	25	A3-02 DO YOU INSPECT RESISTORS.	82	75	89	84	90	83	
A	26	A3-03 DO YOU CLEAN RESISTORS.	72	63	81	75	74	72	
A	27	A3-04 DO YOU ADJUST RESISTORS.	82	75	88	83	89	83	
A	28	A3-05 DO YOU CHECK OHMIC VALUE OR RESISTORS.	83	76	88	83	88	83	
A	29	A3-06 DO YOU REMOVE OR REPLACE RESISTORS.	81	74	87	84	91	78	
A	30	A3-07 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASKS YOU PERFORM.	20	19	21	20	20	16	
A	31	A3-08 DO YOU USE OR REFER TO RESISTOR SYMBOLS SUCH AS FIXED RESISTOR SYMBOLS OR TAPPED RESISTOR SYMBOLS.	81	75	86	81	81	72	
A	32	A3-09 DO YOU IDENTIFY OR CLASSIFY THE RESISTORS YOU WORK WITH AS CARBON, FIXED WIRE, SLIDE TAP, RHEOSTAT, OR POTENTIOMETER.	78	71	84	78	79	77	
A	33	A3-10 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE.	81	74	87	82	86	76	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
A	34	A3-11 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE.	71	63	78	72	72	69	
A	35	A3-12 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE.	17	18	16	17	18	12	
A	36	A3-13 DO YOU MAKE DECISIONS IN WHICH YOU MUST DETERMINE HOW TWO OR MORE BATTERIES MUST BE CONNECTED TOGETHER TO ACHIEVE A SPECIFIC VOLTAGE.	29	24	34	29	21	28	
A	37	A3-14 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES	85	79	90	85	89	83	
A	38	A3-15 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES RESISTIVE CIRCUITS.	47	41	52	48	41	41	
A	39	A3-16 DO YOU CALCULATE TOTAL CURRENT FOR SERIES RESISTIVE CIRCUITS.	42	36	46	42	37	31	
A	40	A3-17 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES RESISTIVE CIRCUITS.	44	41	47	45	41	37	
A	41	A3-18 DO YOU CALCULATE POWER DISSIPATION FOR SERIES RESISTIVE CIRCUITS.	35	33	35	35	36	29	
A	42	A3-19 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES PARALLEL RESISTIVE CIRCUITS.	43	39	47	44	41	37	
A	43	A3-20 DO YOU CALCULATE TOTAL CURRENT FOR SERIES PARALLEL RESISTIVE CIRCUITS.	39	35	42	39	37	29	
A	44	A3-21 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	41	39	43	42	39	35	
A	45	A3-22 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	36	34	36	36	34	23	
A	46	A3-23 DO YOU CALCULATE POWER DISSIPATION FOR SERIES PARALLEL RESISTIVE CIRCUITS.	31	31	32	32	32	26	
A	47	A3-24 DO YOU CALCULATE TOTAL RESISTANCE FOR PARALLEL RESISTIVE CIRCUITS.	42	38	46	43	40	34	
A	48	A3-25 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RESISTIVE CIRCUITS.	38	35	41	39	37	28	
A	49	A3-26 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR PARALLEL RESISTIVE CIRCUITS.	40	38	41	41	37	28	
A	50	A3-27 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR PARALLEL RESISTIVE CIRCUITS.	34	32	35	34	32	22	
A	51	A3-28 DO YOU CALCULATE POWER DISSIPATION FOR PARALLEL RESISTIVE CIRCUITS.	30	30	30	31	30	21	
B	52	B1-01 DO YOU MEASURE RESISTANCE.	86	79	92	86	92	88	
B	53	B1-02 DO YOU REPAIR OHMMETERS.	7	4	9	6	9	6	
B	54	B1-03 DO YOU MEASURE VOLTAGE.	88	81	95	87	92	95	MULTIMETER USES
B	55	B1-04 DO YOU REPAIR VOLTMETERS.	6	3	9	6	4	7	
B	56	B1-05 DO YOU REPAIR AMMETERS.	6	3	8	6	5	6	
B	57	B1-06 DO YOU MEASURE CURRENT.	77	71	82	77	83	70	
B	58	B1-07 DO YOU USE MULTIMETERS.	88	81	94	87	93	95	
B	59	B1-08 DO YOU DIRECTLY USE A QUANTITY OF CHARGE CALLED A COULOMB.	4	5	3	3	8	2	
B	60	B1-09 DO YOU READ SCHEMATICS.	89	82	94	88	92	91	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

			DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
B	61	B2-01	DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS).	73	67	78	72	82	76	ALTERNATING CURRENT
B	62	B2-02	DO YOU USE OR REFER TO THE TERM PEAK TO PEAK VOLTAGE.	78	72	82	78	82	76	
B	63	B2-03	DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	68	62	73	68	73	73	
B	64	B2-04	DO YOU USE OR REFER TO THE TERM WAVE LENGTH.	53	54	52	51	58	49	
B	65	B2-05	DO YOU USE OR REFER TO THE TERM FREQUENCY.	88	82	93	86	92	93	
B	66	B2-06	DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	30	27	32	30	28	28	
B	67	B3-01	DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB.	71	65	76	71	79	67	INDUCTORS AND INDUCTIVE REACTANCE
B	68	B3-02	DO YOU INSPECT INDUCTORS.	69	61	76	71	81	69	
B	69	B3-03	DO YOU CLEAN INDUCTORS.	61	51	68	63	70	57	
B	70	B3-04	DO YOU ADJUST INDUCTORS.	63	57	67	63	80	64	
B	71	B3-05	DO YOU REMOVE OR REPLACE INDUCTORS.	66	60	70	67	81	63	
B	72	B3-06	DO YOU USE OR REFER TO INDUCTANCE.	59	54	63	57	70	56	
B	73	B3-07	DO YOU USE OR REFER TO HENRIES.	42	41	43	42	50	31	
B	74	B3-08	DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	42	41	43	41	41	35	
B	75	B3-09	DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	8	9	7	7	7	6	
B	76	B3-10	DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	9	11	7	9	7	6	
B	77	B3-11	DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS	9	11	7	8	6	7	
B	78	B3-12	DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	9	9	9	9	6	6	
B	79	B2-13	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	8	9	6	6	6	5	
B	80	B2-14	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.	8	8	7	7	9	3	
B	81	B2-15	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	9	9	9	8	7	3	
B	82	B2-16	DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	9	10	9	9	2	7	
B	83	B3-17	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	14	14	13	14	6	7	
B	84	B3-18	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	13	14	13	14	6	6	
B	85	B3-19	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	13	14	12	13	6	7	
B	86	B3-20	DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	26	24	29	26	20	17	
B	87	B3-21	DO YOU CALCULATE INDUCTIVE REACTANCE.	16	18	15	16	11	8	
B	88	B3-22	DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	26	26	26	25	18	20	
B	89	B3-23	DO YOU WORK WITH POWER INDUCTORS.	29	24	34	32	20	28	
B	90	B3-24	DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	55	49	60	56	55	52	
B	91	B3-25	DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	58	53	62	58	64	59	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
C	92	C1-01 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB.	79	75	83	78	86	80	CAPACITORS AND CAPACITIVE REACTANCE
C	93	C1-02 DO YOU INSPECT CAPACITORS.	80	72	87	81	89	81	
C	94	C1-03 DO YOU CLEAN CAPACITORS.	69	59	78	73	73	65	
C	95	C1-04 DO YOU ADJUST CAPACITORS.	74	67	80	74	87	74	
C	96	C1-05 DO YOU TEST CAPACITORS.	70	64	75	72	77	62	
C	97	C1-06 DO YOU DISCHARGE CAPACITORS.	71	63	77	74	74	65	
C	98	C1-07 DO YOU REMOVE OR REPLACE CAPACITORS.	78	70	84	80	89	73	
C	99	C1-08 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE.	18	17	19	18	17	10	
C	100	C1-09 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN A DIELECTRIC.	3	4	2	2	3	1	
C	101	C1-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS.	71	65	76	71	73	66	
C	102	C1-11 DO YOU USE OR REFER TO CAPACITANCE.	73	66	79	74	77	64	
C	103	C1-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT	22	21	22	22	20	12	
C	104	C1-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS	58	52	65	61	55	52	
C	105	C1-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE	35	34	35	34	29	28	
C	106	C1-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES	31	26	36	33	27	22	
C	107	C1-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS	77	71	83	77	79	78	
C	108	C1-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS	78	72	83	77	86	77	
C	109	C1-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC	71	66	76	71	78	71	
C	110	C1-19 DO YOU WORK WITH CAPACITORS IN DON'T REMEMBER WHICH CIRCUITS	14	13	15	15	15	13	
C	111	C1-20 DO YOU CALCULATE CAPACITANCE FOR PARTICULAR CAPACITORS USING FORMULAS	12	12	12	12	8	5	
C	112	C1-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT	10	10	10	9	11	5	
C	113	C1-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS	11	13	10	10	11	5	
C	114	C1-23 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES	21	19	22	21	13	15	
C	115	C1-24 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN PARALLEL	21	19	22	21	13	15	
C	116	C1-25 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES-PARALLEL CIRCUITS	18	16	20	18	13	10	
C	117	C1-26 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO	31	31	32	30	33	24	
C	118	C1-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS	26	22	30	27	20	15	
C	119	C1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY	28	28	28	28	20	23	
C	120	C1-29 DO YOU CALCULATE CAPACITIVE REACTANCE	17	19	15	16	14	7	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
C 152	C2-25	DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS	60	56	62	59	70	56	
C 153	C2-26	DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	63	56	69	63	72	59	
C 154	C2-27	DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	67	62	72	67	73	65	
C 155	C2-28	DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	45	42	47	45	45	42	
C 156	C2-29	DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	48	44	51	49	48	48	
C 157	C2-30	DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS	57	51	62	57	62	51	
C 158	C2-31	DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS	25	24	25	23	30	23	
C 159	C2-32	DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH	24	21	26	24	20	29	
C 160	C2-33	DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO	20	19	20	19	15	17	
C 161	C2-34	DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS	34	33	35	34	33	28	
C 162	C2-35	DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS	14	14	14	13	13	12	
C 163	C2-36	DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS	10	10	11	10	10	6	
C 164	C2-37	DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS	31	33	28	26	52	44	
C 165	C2-38	DO YOU INSPECT THREE PHASE TRANSFORMERS	28	29	26	25	49	41	
C 166	C2-39	DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS	21	20	21	20	30	26	
C 167	C2-40	DO YOU ADJUST THREE PHASE TRANSFORMERS	14	14	14	13	20	15	
C 168	C2-41	DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS	23	25	22	20	41	38	
C 169	C2-42	DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS	25	27	23	21	45	41	
C 170	C2-43	DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS WINDINGS	6	7	5	6	7	3	
C 171	C3-01	DO YOU USE OR REFER TO PERMANENT MAGNETS	33	34	31	28	52	44	
C 172	C3-02	DO YOU USE OR REFER TO TEMPORARY MAGNETS	21	22	20	20	22	20	MAGNETISM
C 173	C3-03	DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS	7	8	7	7	8	5	
C 174	C3-04	DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS	6	7	6	5	6	5	
C 175	C3-05	DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS	7	9	6	6	11	6	
C 176	C3-06	DO YOU USE OR REFER TO RESIDUAL MAGNETISM	9	10	8	8	10	7	
C 177	C3-07	DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX	17	20	15	14	22	14	
C 178	C3-08	DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	4	4	4	4	6	2	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

			DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
C	179	C3-09	DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM	4	4	4	4	6	2	
C	180	C3-10	DO YOU USE OR REFER TO MAGNETIC INDUCTION	12	13	11	10	14	10	
C	181	C3-11	DO YOU USE OR REFER TO FLUX DENSITY	10	12	8	9	14	3	
C	182	C3-12	DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT	31	33	30	30	34	29	
C	183	C3-13	DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES	15	16	15	14	13	12	
C	184	C3-14	DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH POLE OF A CURRENT CARRYING COIL	12	12	11	11	9	9	
D	185	D1-01	DO YOU WORK WITH RC, LR, RCL CIRCUITS IN YOUR PRESENT JOB	52	48	55	52	58	48	RCL CIRCUITS
D	186	D1-02	DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL CIRCUITS	9	11	8	9	10	5	
D	187	D1-03	DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN WORKING WITH RCL CIRCUITS	8	10	7	7	9	5	
D	188	D1-04	DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL CIRCUITS	9	9	8	9	8	7	
D	189	D1-05	DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL CIRCUITS	8	8	7	8	7	6	
D	190	D1-06	DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL CIRCUITS	8	8	7	7	6	6	
D	191	D1-07	DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL CIRCUITS	38	36	40	37	44	38	
D	192	D1-08	DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING WITH RCL CIRCUITS	19	19	19	19	20	15	
D	193	D1-09	DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN WORKING WITH RCL CIRCUITS	23	23	24	23	29	21	
D	194	D1-10	DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN WORKING WITH RCL CIRCUITS	22	21	23	23	23	22	
D	195	D1-11	DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN WORKING WITH RCL CIRCUITS	15	14	15	14	14	10	
D	196	D1-12	DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING WITH RCL CIRCUITS	15	16	15	16	15	8	
D	197	D1-13	DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN WORKING WITH RCL CIRCUITS	43	42	45	42	47	42	
D	198	D1-14	DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH RCL CIRCUITS	50	48	52	50	58	43	
D	199	D1-15	DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH RCL CIRCUITS	45	44	47	46	49	38	
D	200	D1-16	DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN WORKING WITH RCL CIRCUITS	47	45	50	48	48	38	
D	201	D1-17	DO YOU USE OR REFER TO HALF POWER POINTS WHEN WORKING WITH RCL CIRCUITS	31	31	30	30	33	23	
D	202	D1-18	DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING WITH RCL CIRCUITS	42	41	43	41	50	37	
D	203	D1-19	DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH RCL CIRCUITS	25	24	25	24	28	16	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006
D 204	D1-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS	91	90	92	90	95	91
D 205	D1-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS	6	7	6	6	7	2
D 206	D1-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS	7	8	6	6	8	7
D 207	D1-23 DO YOU CALCULATE TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS	12	12	11	11	9	7
D 208	D1-24 DO YOU CALCULATE PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS	5	6	3	4	5	6
D 209	D1-25 DO YOU CALCULATE TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS	12	13	11	11	8	9
D 210	D1-26 DO YOU CALCULATE IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS	5	5	4	4	7	5
D 211	D1-27 DO YOU CALCULATE APPARENT POWER (PA) FOR SERIES RCL CIRCUITS	8	9	6	8	7	6
D 212	D1-28 DO YOU CALCULATE TRUE POWER (PT) FOR SERIES RCL CIRCUITS	9	10	8	9	7	8
D 213	D1-29 DO YOU CALCULATE POWER FACTORS (PF) FOR SERIES RCL CIRCUITS	7	8	7	7	5	7
D 214	D1-30 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RCL CIRCUITS	11	11	10	10	8	8
D 215	D1-31 DO YOU CALCULATE IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS	4	5	3	4	5	5
D 216	D1-32 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING THE ASSUMED VOLTAGE METHOD	6	7	5	6	5	5
D 217	D1-33 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING OHM'S LAW	12	13	12	12	8	10
D 218	D1-34 DO YOU CHECK CAPACITORS USING OHMMETERS	49	43	53	50	54	47
D 219	D1-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION	36	33	38	37	40	30
D 220	D1-36 DO YOU CHECK INDUCTORS USING OHMMETERS	46	41	50	46	49	43
D 221	D1-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION	31	27	35	32	32	28
D 222	D1-38 DO YOU USE OR REFER TO THE GENERAL RULE THAT THETA= 0, PF = 1, AND PA = PT FOR RESONANT CIRCUITS	3	3	3	3	2	3
D 223	D1-39 DO YOU CALCULATE RESONANT FREQUENCIES FOR RCL CIRCUITS	13	13	13	13	9	7
D 224	D1-40 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS	22	22	22	22	22	14
D 225	D1-41 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS	20	20	20	19	20	12
D 226	D1-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 PERCENT OF THE PEAK CURRENT VALUE	26	26	26	26	28	19
D 227	D1-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO Q	20	19	22	21	17	13
D 228	D1-44 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS	13	14	11	12	12	6

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
D 229	D2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO SERIES OR PARALLEL RESONANT CIRCUITS OR TIME CONSTANTS	24	24	28	22	28	21	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)
D 230	D2-02 DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS	16	17	16	14	17	14	
D 231	D2-03 DO YOU WORK WITH, USE, OR REFER TO AVAILABLE VOLTAGE	12	12	12	11	15	10	
D 232	D2-04 DO YOU WORK WITH, USE, OR REFER TO TRANSIENT INTERVALS	9	9	8	8	9	7	
D 233	D2-05 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)	13	13	12	11	13	10	
D 234	D2-06 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS	6	7	5	5	5	2	
D 235	D2-07 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS	5	6	4	4	5	2	
D 236	D2-08 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS	6	7	5	4	5	3	
D 237	D2-09 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES	6	6	5	5	6	5	
D 238	D2-10 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS	7	6	8	6	7	7	
D 239	D3-01 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB	72	69	79	72	76	71	FILTERS
D 240	D3-02 DO YOU INSPECT FILTER CIRCUITS	63	55	70	65	71	62	
D 241	D3-03 DO YOU CLEAN FILTER CIRCUITS	56	47	64	59	63	45	
D 242	D3-04 DO YOU ALIGN OR ADJUST FILTER CIRCUITS	54	48	60	55	69	51	
D 243	D3-05 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL	62	53	68	63	67	64	
D 244	D3-06 DO YOU TROUBLESHOOT TO COMPONENT PARTS	47	43	50	48	61	41	
D 245	D3-07 DO YOU REMOVE OR REPLACE THE COMPLETE FILTER CIRCUIT	64	55	72	67	72	63	
D 246	D3-08 DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT PARTS	44	40	48	45	58	43	
D 247	D3-09 DO YOU WORK WITH LOW PASS FILTERS	69	62	74	68	78	67	
D 248	D3-10 DO YOU WORK WITH HIGH PASS FILTERS	68	62	73	67	77	67	
D 249	D3-11 DO YOU WORK WITH BANDPASS FILTERS	72	65	78	71	82	69	
D 250	D3-12 DO YOU WORK WITH BAND-REJECT FILTERS	61	55	65	61	67	47	
D 251	D3-13 DON'T REMEMBER WHICH TYPE OF FILTER YOU WORK WITH	11	11	11	10	14	6	
D 252	D3-14 DO YOU WORK WITH L-SECTION FILTER CONFIGURATION	43	41	45	42	51	43	
D 253	D3-15 DO YOU WORK WITH T-SECTION FILTER CONFIGURATION	44	41	46	43	52	44	
D 254	D3-16 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATION	44	41	46	42	52	45	
D 255	D3-17 DON'T REMEMBER WHICH TYPE FILTER CONFIGURATION	28	25	31	29	32	17	
D 256	D3-18 DO THE FILTERS YOU WORK WITH USE PARALLEL RESONANT CIRCUITS	39	38	40	38	45	36	
D 257	D3-19 DO THE FILTERS YOU WORK WITH USE SERIES-PARALLEL CIRCUITS	39	38	41	38	45	41	
D 258	D3-20 DO THE FILTERS YOU WORK WITH USE SERIES RESONANT CIRCUITS	39	38	39	38	45	38	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		By-Task	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
D 259	D3-21	DON'T REMEMBER WHICH TYPE OF BASIC CIRCUIT	32	29	34	32	38	26	
D 260	D3-22	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC FILTERS	9	9	9	8	9	6	
E 261	E1-01	DO YOU WORK WITH COUPLING DEVICES IN YOUR PRESENT JOB	55	50	59	55	53	49	
E 262	E1-02	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC COUPLING	44	39	47	42	45	48	COUPLING
E 263	E1-03	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH IMPEDANCE COUPLING	46	43	49	46	47	45	
E 264	E1-04	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH TRANSFORMER COUPLING	50	46	54	50	46	51	
E 265	E1-05	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM RC COUPLING	41	36	46	41	45	45	
E 266	E1-06	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM IMPEDANCE COUPLING	42	37	47	43	45	44	
E 267	E1-07	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM TRANSFORMER COUPLING	46	40	52	48	46	45	
E 268	E1-08	DO YOU WORK WITH DIRECTLY COUPLED CIRCUITS	45	40	49	45	45	44	
E 269	E1-09	DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED CIRCUITS	40	35	43	39	42	37	
E 270	E1-10	DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED CIRCUITS	37	33	40	38	38	31	
E 271	E1-11	DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS	46	41	50	47	44	41	
E 272	E1-12	DON'T REMEMBER WHICH TYPE OF COUPLING CIRCUITS	16	15	16	15	17	17	
E 273	E2-01	IN YOUR PRESENT JOB, DO YOU PERFORM SOLDERING TECHNIQUES OR INSPECT OR EVALUATE SOLDERED CONNECTIONS	82	74	90	84	86	86	
E 274	E2-02	DO YOU SELECT TYPE OF SOLDER TO USE	66	59	72	67	71	66	SOLDERING
E 275	E2-03	DO YOU ADD FLUX TO CONNECTIONS	71	63	78	71	83	77	
E 276	E2-04	DO YOU CLEAN CONNECTIONS USING SOLVENTS	72	67	77	73	86	76	
E 277	E2-05	DO YOU STRIP INSULATION FROM WIRES	83	75	91	85	89	86	
E 278	E2-06	DO YOU CONNECT OR DISCONNECT HEAT SINKS	79	72	85	81	86	79	
E 279	E2-07	DO YOU BEND OR SHAPE WIRES OR LEADS	83	74	91	85	89	86	
E 280	E2-08	DO YOU CUT WIRES	84	75	91	85	89	86	
E 281	E2-09	DO YOU FILE OR SHAPE SOLDERING IRON TIPS	74	67	80	75	81	76	
E 282	E2-10	DO YOU TIN SOLDERING IRON TIPS	82	73	90	84	87	86	
E 283	E2-11	DO YOU CLEAN SOLDERING IRON TIPS	83	74	91	85	87	86	
E 284	E2-12	DO YOU CLEAN ELECTRICAL SURFACES USING ERASERS	73	65	80	76	79	65	
E 285	E2-13	DO YOU TIN OR PRE-TIN CONDUCTORS	79	70	86	80	82	81	
E 286	E2-14	DO YOU INSPECT SOLDERED CONNECTIONS	83	74	91	85	88	86	
E 287	E2-15	DO YOU DESOLDER CONNECTIONS BY WICKING	63	58	67	63	76	69	
E 288	E2-16	DO YOU DESOLDER CONNECTIONS USING VACUUM DESOLDERING TOOLS	71	66	76	73	81	69	
E 289	E2-17	DO YOU CUT COMPONENT LEADS TO REMOVE COMPONENTS	63	56	69	65	71	56	
E 290	E2-18	DO YOU CRUSH COMPONENTS FOR REMOVAL	22	19	24	22	23	17	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
E 291	E2-19	DO YOU MAKE HARDWIRE CONNECTIONS	80	71	88	83	83	81	
E 292	E2-20	DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS	74	68	80	76	89	72	
E 293	E2-21	DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS ON PRINTED CIRCUIT BOARDS	74	68	80	76	88	73	
E 294	E2-22	DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS ON PRINTED CIRCUIT BOARDS	73	67	77	73	89	73	
E 295	E3-01	DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB	75	64	84	77	74	77	
E 296	E3-02	DO YOU ADJUST RELAYS	49	37	59	53	41	41	RELAYS
E 297	E3-03	DO YOU CLEAN RELAYS	66	53	78	71	61	64	
E 298	E3-04	DO YOU INSPECT RELAYS	71	59	81	74	70	74	
E 299	E3-05	DO YOU REMOVE OR REPLACE COMPLETE RELAYS	72	60	82	75	70	78	
E 300	E3-06	DO YOU REMOVE OR REPLACE PARTS OR RELAYS	22	19	28	23	23	10	
E 301	E3-07	DO YOU TROUBLESHOOT RELAYS	63	53	73	66	67	65	
E 302	E3-08	DO YOU STRAIGHTEN RELAY CONTACTS	52	40	62	56	42	43	
E 303	E3-09	DO YOU PERFORM TASKS ON RELAY CONTACTS	53	40	63	59	45	44	
E 304	E3-10	DO YOU PERFORM TASKS ON RELAY CORES	8	7	9	9	5	5	
E 305	E3-11	DO YOU PERFORM TASKS ON RELAY COILS	12	10	14	14	7	7	
E 306	E3-12	DO YOU PERFORM TASKS ON RELAY ARMATURES	20	14	24	24	11	9	
E 307	E3-13	DO YOU PERFORM TASKS ON RELAY SPRINGS	24	16	30	27	15	16	
E 308	E3-14	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPER (NO) SCHEMATIC SYMBOLS FOR RELAYS	53	46	60	56	53	45	
E 309	E3-15	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS	52	44	59	55	50	45	
E 310	E3-16	DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT) SCHEMATIC SYMBOLS FOR RELAYS	51	44	57	53	52	42	
E 311	E3-17	DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS	50	43	57	53	50	44	
E 312	E3-18	DO YOU USE OR REFER TO OTHER RELAY SYMBOLS SCHEMATIC SYMBOLS FOR RELAYS	51	42	59	54	48	44	
E 313	E3-19	DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE	53	42	63	57	52	56	
F 314	F1-01	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES	29	21	36	30	22	35	MICROPHONES
F 315	F1-02	DO YOU INSPECT MICROPHONES	23	16	29	25	16	24	
F 316	F1-03	DO YOU CLEAN MICROPHONES	21	14	27	22	14	20	
F 317	F1-04	DO YOU OPERATE MICROPHONES	28	20	36	30	20	35	
F 318	F1-05	DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OR MICROPHONES	22	14	29	23	16	28	
F 319	F1-06	DO YOU TROUBLESHOOT DOWN TO MICROPHONE PARTS	10	7	12	11	8	8	
F 320	F1-07	DO YOU REMOVE OR REPLACE COMPLETE MICROPHONES	25	16	33	26	17	34	
F 321	F1-08	DO YOU REMOVE OR REPLACE MICROPHONE PARTS	10	7	13	11	8	10	
F 322	F1-09	DO YOU PERFORM TASKS ON CARBON MICROPHONES	18	12	23	18	13	21	
F 323	F1-10	DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES	5	4	6	5	3	5	
F 324	F1-11	DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES	6	4	9	7	2	5	
F 325	F1-12	DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES	13	9	17	15	8	15	
F 326	F1-13	DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES	1	1	2	2	1	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
F	327	F2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH SPEAKERS	35	24	44	39	24	26	
F	328	F2-02 DO YOU INSPECT SPEAKERS	32	20	41	35	23	26	SPEAKERS
F	329	F2-03 DO YOU CLEAN SPEAKERS	29	17	39	33	19	24	
F	330	F2-04 DO YOU OPERATE SPEAKERS	32	21	42	36	23	26	
F	331	F2-05 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OF SPEAKERS	30	20	39	34	23	24	
F	332	F2-06 DO YOU TROUBLESHOOT DOWN TO SPEAKER PARTS	7	4	10	9	3	6	
F	333	F2-07 DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS	29	20	38	33	22	26	
F	334	F2-08 DO YOU REMOVE OR REPLACE SPEAKER PARTS	4	2	7	5	2	2	
F	335	F2-09 DO YOU PERFORM ANY TASKS ON SPEAKER CONES	4	2	6	5	1	2	
F	336	F2-10 DO YOU PERFORM ANY TASKS ON SPEAKER SPIDERS	1	1	2	2	0	0	
F	337	F2-11 DO YOU PERFORM ANY TASKS ON SPEAKER FIELD COILS	2	2	3	3	0	1	
F	338	F2-12 DO YOU PERFORM ANY TASKS ON SPEAKER VOICE COILS	4	2	5	4	1	3	
F	339	F2-13 DO YOU PERFORM ANY TASKS ON SPEAKER PERMANENT MAGNETS	3	3	4	4	2	1	
F	340	F2-14 DO YOU PERFORM ANY TASKS ON SPEAKER ELECTROMAGNETS	3	2	3	3	1	1	
F	341	F2-15 DO YOU PERFORM ANY TASKS ON SPEAKER SOFT IRON CORES	2	1	2	2	0	1	
F	342	F3-01 DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB	78	72	83	79	83	64	
F	343	F3-02 DO YOU USE OSCILLOSCOPES TO PERFORM OPERATIONAL CHECKS	72	66	78	74	78	58	OSCILLOSCOPES
F	344	F3-03 DO YOU USE OSCILLOSCOPES TO PERFORM ALIGNMENTS OR ADJUSTMENTS	72	64	78	74	79	65	
F	345	F3-04 DO YOU USE OSCILLOSCOPES TO TROUBLESHOOT ELECTRONIC CIRCUITS	72	66	78	73	83	63	
F	346	F3-05 DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCY	55	50	59	55	59	44	
F	347	F3-06 DO YOU USE OSCILLOSCOPES TO MEASURE TIME	41	41	42	40	52	35	
F	348	F3-07 DO YOU USE OSCILLOSCOPES TO OBSERVE LISAJOUS PATTERNS	34	31	36	35	38	21	
F	349	F3-08 DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE UTILIZING ATTENUATOR PROBES	59	54	64	60	70	51	
F	350	F3-09 DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIERS	25	23	27	25	27	20	
F	351	F3-10 DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGE	63	58	67	64	69	57	
F	352	F3-11 DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS	52	47	56	53	59	43	
F	353	F3-12 DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGE	62	56	67	63	69	56	
G	354	G1-01 DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB	75	67	81	74	81	79	
G	355	G1-02 DO YOU INSPECT DIODES	71	63	78	72	82	78	SEMICONDUCTOR DIODES
G	356	G1-03 DO YOU REMOVE OR REPLACE DIODES	72	62	81	73	83	81	
G	357	G1-04 DO YOU CHECK DIODES USING AN INSTRUMENT	68	60	75	69	78	73	
G	358	G1-05 DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES	6	8	5	5	7	2	
G	359	G1-06 DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE LIAS RESISTANCE	6	8	4	5	8	1	
G	360	G1-07 DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR DIODES	14	13	15	14	14	10	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006
G 361	G1-08 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES	48	43	53	48	49	56
G 362	G1-09 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE	63	57	69	64	69	70
G 363	G1-10 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW	10	12	9	9	13	7
G 364	G1-11 DO YOU USE OR REFER TO MEASUREMENTS OF FORWARD BIAS RESISTANCE	44	36	51	44	47	45
G 365	G1-12 DO YOU USE OR REFER TO DIODE COLOR CODING	23	22	25	24	30	13
G 366	G1-13 DO YOU USE OR REFER TO CENTRIFUGAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	2	2	1	1	3	1
G 367	G1-14 DO YOU USE OR REFER TO CENTRIPETAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	2	2	1	1	2	1
G 368	G1-15 DO YOU USE OR REFER TO DIODE NUMBERING SYSTEM, SUCH AS IN 538	54	45	62	54	61	64
G 369	G1-16 DO YOU USE OR REFER TO KINETIC ENERGY OF AN ELECTRON MOVING IN ORBIT	2	2	2	2	3	1
G 370	G1-17 DO YOU USE OR REFER TO POTENTIAL ENERGY OF AN ELECTRON MOVING IN ORBIT	2	2	1	2	3	1
G 371	G1-18 DO YOU USE OR REFER TO MEASUREMENTS OF REVERSE BIAS RESISTANCE	42	35	49	43	47	38
G 372	G1-19 DO YOU USE OR REFER TO NUMBER OF ELECTRONS IN A PARTICULAR SHELL OR ORBIT	3	3	2	2	3	1
G 373	G1-20 DO YOU USE OR REFER TO PERMISSIBLE ENERGY LEVELS OF AN ORBITING ELECTRON	2	2	2	2	2	1
G 374	G1-21 DO YOU USE OR REFER TO FORBIDDEN ENERGY LEVELS OF AN ORBITING ELECTRON	3	4	2	2	3	1
G 375	G1-22 DO YOU USE OR REFER TO VALENCE ELECTRONS (THOSE IN THE OUTERMOST SHELL)	3	5	2	2	4	1
G 376	G1-23 DO YOU USE OR REFER TO ATOMIC NUMBER (TOTAL NUMBER OF ELECTRONS IN ATOM)	3	3	2	2	4	1
G 377	G1-24 DO YOU USE OR REFER TO SYMBOLS ON THE DIODE WHICH INDICATE THE CATHODE END	63	56	70	63	65	70
G 378	G1-25 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON	15	14	17	16	11	12
G 379	G1-26 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OF RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)	29	29	30	29	33	22
G 380	G1-27 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES, SUCH AS VOLTAGE - CURRENT CHARACTERISTIC CURVES (PERHAPS YOU DO THIS TO IDENTIFY POINTS OF STRUCTURAL BREAKDOWN OR OPERATING REGIONS)	11	12	10	10	14	12
G 381	G1-28 DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS	46	44	48	45	58	44
G 382	G1-29 DO YOU USE OR REFER TO VALENCE BAND IN SEMICONDUCTOR MATERIALS	4	5	2	3	3	1

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
G 383	G1-30	DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	4	6	2	3	4	2	
G 384	G1-31	DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	5	6	3	4	5	1	
G 385	G1-32	DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	3	4	2	3	3	1	
G 386	G1-33	DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	5	7	3	4	5	2	
G 387	G1-34	DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	12	14	9	11	14	9	
G 388	G1-35	DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	4	6	3	3	3	1	
G 389	G1-36	DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	4	6	3	4	2	1	
G 390	G1-37	DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	21	23	19	20	23	17	
G 391	G1-38	DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	21	23	19	20	24	17	
G 392	G1-39	DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	6	7	5	5	6	3	
G 393	G1-40	DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	6	7	5	5	6	3	
G 394	G1-41	DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	4	6	3	3	5	1	
G 395	G1-42	DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	7	9	6	6	6	6	
G 396	G1-43	DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL	7	9	5	6	6	3	
G 397	G1-44	DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	45	36	52	45	45	58	
G 398	G1-45	DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	4	4	2	3	4	1	
G 399	G1-46	DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	36	29	42	39	32	30	
G 400	G1-47	DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	18	16	19	19	14	8	
G 401	G1-48	DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	14	13	14	16	8	6	
G 402	G1-49	DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS	17	16	18	18	13	9	
G 403	G1-50	DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	20	19	22	22	14	15	
G 404	G2-01	DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	71	68	74	70	86	72	
G 405	G2-02	DO YOU INSPECT TRANSISTORS	68	63	73	68	87	69	
G 406	G2-03	DO YOU REMOVE OR REPLACE TRANSISTORS	69	64	73	70	89	66	TRANSISTORS
G 407	G2-04	DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	63	60	66	64	83	59	
G 408	G2-05	DO YOU USE OR REFER TO EMITTER - BASE (EB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	57	56	58	56	73	51	
G 409	G2-06	DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	56	55	57	55	73	52	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
G 410	G2-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS	56	55	57	55	73	53	
G 411	G2-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION	16	19	19	19	19	12	
G 412	G2-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION	16	19	19	19	20	12	
G 413	G2-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER)	33	34	33	34	34	26	
G 414	G2-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A TRANSISTOR	18	18	18	17	21	20	
G 415	G2-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS	69	65	72	68	83	67	
G 416	G2-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS Q1, Q2, Q3, ETC	70	67	73	69	83	70	
G 417	G2-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION	43	37	48	45	43	42	
G 418	G2-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT IB IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT IE (USUALLY IB BEING 2 TO 8 PERCENT OF IE)	25	26	23	22	33	26	
G 419	G2-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS	31	33	29	28	42	35	
G 420	G2-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES	18	18	18	16	21	21	
G 421	G2-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES	11	12	10	9	14	12	
G 422	G2-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS	11	11	10	9	13	15	
G 423	G2-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS	9	10	7	8	11	8	
G 424	G2-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS	8	9	7	7	11	6	
G 425	G2-22 DO YOU CALCULATE BETA TRANSISTOR GAINS	4	5	3	4	5	3	
G 426	G2-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS	3	4	3	3	4	2	
G 427	G2-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS	3	4	2	3	4	1	
G 428	G3-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB	61	57	64	60	73	65	TRANSISTOR AMPLIFIERS
G 429	G3-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS	58	53	63	59	73	64	
G 430	G3-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS	56	51	60	56	71	59	
G 431	G3-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL	57	53	61	57	72	62	
G 432	G3-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS	52	50	53	52	69	56	
G 433	G3-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER	55	49	60	56	70	60	
G 434	G3-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS	52	49	54	52	70	53	
G 435	G3-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE CURRENT	21	24	18	18	31	16	
G 436	G3-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	10	10	9	9	13	6	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006
G 437	G3-10 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	20	22	18	17	30	16
G 438	G3-11 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	8	8	8	7	11	5
G 439	G3-12 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	19	21	18	17	29	15
G 440	G3-13 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	9	10	9	8	13	5
G 441	G3-14 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	4	4	4	3	3	6
G 442	G3-15 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	9	8	10	8	11	8
G 443	G3-16 DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	3	4	3	3	2	5
G 444	G3-17 DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	34	33	36	33	48	37
G 445	G3-18 DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	25	25	25	24	38	28
G 446	G3-19 DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	34	31	36	33	47	42
G 447	G3-20 DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	6	7	5	5	7	6
G 448	G3-21 DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	6	6	5	5	6	5
G 449	G3-22 DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	5	5	6	5	5	6
G 450	G3-23 DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT [Q] OF THE TRANSISTOR)	9	11	9	8	13	7
G 451	G3-24 DO YOU COMPUTE THE STATIC OPERATING POINT [Q] OF A TRANSISTOR AT DIFFERENT TEMPERATURES	3	4	3	3	3	3
G 452	G3-25 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	24	23	24	24	30	14
G 453	G3-26 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	22	22	21	20	32	17

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006
G 454	G3-27 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION	22	23	22	21	36	15
G 455	G3-28 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION	22	24	21	21	33	15
G 456	G3-29 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION	22	22	21	21	33	15
G 457	G3-30 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION	18	18	17	17	27	10
G 458	G3-31 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM EMITTER (SWAMPING) RESISTOR STABILIZATION	26	24	27	26	35	20
G 459	G3-32 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM SELF-BIAS STABILIZATION	24	25	24	23	39	21
G 460	G3-33 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM THERMISTOR STABILIZATION	24	24	25	23	39	21
G 461	G3-34 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM FORWARD BIAS DIODE STABILIZATION	24	24	24	23	39	23
G 462	G3-35 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM REVERSE BIAS DIODE STABILIZATION	24	24	24	23	39	22
G 463	G3-36 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM DOUBLE DIODE STABILIZATION	18	18	19	18	29	15
G 464	G3-37 DO YOU IDENTIFY AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS	33	32	33	32	36	37
G 465	G3-38 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF AMPLITUDE DISTORTION	32	31	33	33	39	28
G 466	G3-39 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS	28	27	28	27	38	20
G 467	G3-40 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS	20	21	19	19	29	12
G 468	G3-41 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF PHASE DISTORTION	18	18	18	17	27	12
G 469	G3-42 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF FREQUENCY DISTORTION	25	24	25	25	36	17
G 470	G3-43 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS IN THE COMMON COLLECTOR CONFIGURATION	15	17	14	14	23	10
G 471	G3-44 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	18	16	21	18	20	19
G 472	G3-45 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	17	18	16	15	27	21
G 473	G3-46 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	42	39	45	42	54	44
G 474	G3-47 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS	22	21	22	21	31	22
G 475	G3-48 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	27	24	30	26	33	37

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
G	476	G3-99 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	32	30	34	31	44	38	
H	477	H1-01 DO YOU USE OR REFER TO VARACTORS	42	41	43	40	52	40	SOLID-STATE SPECIAL PURPOSE DEVICES
H	478	H1-02 DO YOU USE OR REFER TO TUNNEL DIODES	47	51	43	42	74	58	
H	479	H1-03 DO YOU USE OR REFER TO FIELD EFFECT TRANSISTORS (FET)	28	28	28	28	34	30	
H	480	H1-04 DO YOU USE OR REFER TO UNIJUNCTION TRANSISTORS	28	30	25	26	38	30	
H	481	H1-05 DO YOU USE OR REFER TO ZENER DIODES	61	60	61	60	78	62	
H	482	H1-06 DO YOU USE OR REFER TO INTEGRATED CIRCUITS	46	46	46	48	43	45	
H	483	H2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES	79	69	87	79	80	78	
H	484	H2-02 DO YOU INSPECT POWER SUPPLIES	77	64	88	78	84	81	
H	485	H2-03 DO YOU CLEAN POWER SUPPLIES	75	61	87	77	81	79	POWER SUPPLIES
H	486	H2-04 DO YOU ALIGN OR ADJUST POWER SUPPLIES	74	64	83	76	80	66	
H	487	H2-05 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL	71	61	80	72	79	70	
H	488	H2-06 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS	65	58	71	67	73	64	
H	489	H2-07 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES	69	58	79	71	75	73	
H	490	H2-08 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS	65	58	71	68	73	57	
H	491	H2-09 DO YOU WORK WITH HALF-WAVE RECTIFIERS	50	46	54	50	58	46	
H	492	H2-10 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS	54	48	59	55	60	49	
H	493	H2-11 DO YOU WORK WITH BRIDGE RECTIFIERS	60	54	64	61	65	55	
H	494	H2-12 DO YOU WORK WITH THREE-PHASE RECTIFIERS	30	32	28	27	47	42	
H	495	H2-13 DO YOU USE OR REFER TO INPUT VOLTAGE	68	59	76	68	71	67	
H	496	H2-14 DO YOU USE OR REFER TO INPUT FREQUENCY	51	47	54	49	60	50	
H	497	H2-15 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGE	54	50	57	53	64	43	
H	498	H2-16 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGE	55	49	62	55	62	55	
H	499	H2-17 DO YOU USE OR REFER TO RIPPLE AMPLITUDE	50	44	56	52	55	40	
H	500	H2-18 DO YOU USE OR REFER TO RIPPLE FREQUENCY	40	35	44	40	46	31	
H	501	H2-19 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE	28	27	28	27	34	20	
H	502	H2-20 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS	50	48	52	49	58	41	
H	503	H2-21 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGE	58	50	64	57	67	53	
H	504	H2-22 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS	50	45	54	49	59	42	
H	505	H2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS	45	41	48	44	56	40	
H	506	H2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS	37	35	39	36	52	31	
H	507	H2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS	36	34	37	34	53	30	
H	508	H2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS	38	36	39	36	52	36	
H	509	H2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS	37	36	38	36	52	35	
H	510	H2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY DON'T REMEMBER WHICH TYPE OF FILTER	37	32	41	37	36	33	
H	511	H2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE FILTER	5	6	5	5	5	3	
H	512	H3-01 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB	72	66	76	72	81	70	OSCILLATORS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
M	513	M3-02 DO YOU INSPECT OSCILLATORS	66	57	74	67	79	69	
M	514	M3-03 DO YOU ALIGN OR ADJUST OSCILLATORS	67	59	78	68	76	69	
M	515	M3-04 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS	59	51	66	59	72	63	
M	516	M3-05 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS	50	47	51	52	62	42	
M	517	M3-06 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL	59	52	65	59	70	59	
M	518	M3-07 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS	50	47	51	51	64	41	
M	519	M3-08 DO YOU USE OR REFER TO FEEDBACK	49	46	53	49	56	46	
M	520	M3-09 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)	50	47	52	49	58	42	
M	521	M3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY	42	38	45	42	46	28	
M	522	M3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY	57	51	63	58	64	47	
M	523	M3-12 DO YOU USE OR REFER TO DAMPING	24	23	26	24	32	20	
M	524	M3-13 DO YOU USE OR REFER TO REGENERATIVE FEEDBACK	42	39	46	43	45	35	
M	525	M3-14 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT	13	13	14	14	14	7	
M	526	M3-15 DO YOU USE OR REFER TO CRITICAL DAMPING	12	12	12	11	14	7	
M	527	M3-16 DO YOU USE OR REFER TO UNDER DAMPING	13	13	12	12	15	9	
M	528	M3-17 DO YOU USE OR REFER TO OVER DAMPING	13	13	12	12	15	9	
M	529	M3-18 DO YOU WORK WITH OSCILLATORS WHICH USE LC TANK CIRCUITS AS FDD	45	42	47	44	51	42	
M	530	M3-19 DO YOU WORK WITH OSCILLATORS WHICH USE RC NETWORKS AS FDD	40	39	41	39	49	38	
M	531	M3-20 DO YOU WORK WITH OSCILLATORS WHICH USE CRYSTALS AS FDD	55	49	61	57	55	52	
M	532	M3-21 DO YOU WORK WITH OSCILLATORS WHICH USE DON'T REMEMBER WHICH TYPE OF FDD	20	19	22	19	27	22	
M	533	M3-22 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS	19	22	17	18	25	10	
M	534	M3-23 DO YOU WORK WITH SHUNT HARTLLY SINUSOIDAL OSCILLATORS	18	20	16	17	26	7	
M	535	M3-24 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS	21	22	20	20	32	14	
M	536	M3-25 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS	13	15	11	12	19	6	
M	537	M3-26 DO YOU WORK WITH BUTLER SINUSOIDAL OSCILLATORS	24	26	23	22	36	20	
M	538	M3-27 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF OSCILLATORS	40	35	44	41	44	40	
I	539	I1-01 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB	37	38	36	34	48	38	
I	540	I1-02 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS	30	28	30	28	37	33	MULTIVIBRATORS
I	541	I1-03 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS	25	25	24	23	36	27	
I	542	I1-04 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS	25	25	25	24	36	27	
I	543	I1-05 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS	20	19	21	19	26	20	
I	544	I1-06 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS	28	29	26	27	38	23	
I	545	I1-07 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS	27	28	26	26	39	30	
I	546	I1-08 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS	26	28	24	27	34	19	
I	547	I1-09 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUITS	21	22	19	19	33	15	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
I	548	I1-10 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORKS	23	25	22	21	33	20	
I	549	I1-11 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTALS	21	23	20	20	33	14	
I	550	I1-12 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN DON'T REMEMBER WHICH TYPE OF FDD	13	13	12	12	18	17	
I	551	I1-13 DO YOU WORK WITH ASTABLE MULTIVIBRATORS	21	23	20	19	32	16	
I	552	I1-14 DO YOU WORK WITH MONOSTABLE MULTIVIBRATORS	26	27	25	24	34	24	
I	553	I1-15 DO YOU WORK WITH BISTABLE MULTIVIBRATORS	28	29	26	25	39	23	
I	554	I1-16 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE MULTIVIBRATORS	11	11	10	10	15	14	
I	555	I2-01 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB	42	35	48	43	50	36	LIMITERS AND CLAMPERS
I	556	I2-02 DO YOU WORK WITH SERIES DIODE LIMITERS	22	23	22	19	37	23	
I	557	I2-03 DO YOU WORK WITH SHUNT DIODE LIMITERS	19	19	19	18	27	14	
I	558	I2-04 DO YOU WORK WITH LIMITERS WITH BIAS	20	19	22	20	27	17	
I	559	I2-05 DO YOU WORK WITH ZENER DIODE LIMITERS	22	21	23	21	31	19	
I	560	I2-06 DO YOU WORK WITH TRANSISTOR LIMITERS	21	21	21	20	31	15	
I	561	I2-07 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF LIMITERS	21	17	24	21	23	21	
I	562	I2-08 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS	16	15	17	15	24	10	
I	563	I2-09 DO YOU WORK WITH DIODE CLAMPING CIRCUITS WITH BIAS	15	14	16	13	24	10	
I	564	I2-10 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF CLAMPING CIRCUIT	19	16	22	20	20	23	
I	565	I3-01 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS ELECTRON TUBES	50	28	68	60	9	23	ELECTRON TUBES
I	566	I3-02 DO YOU CHECK ELECTRON TUBES TO SEE IF THEY ARE GOOD	47	25	66	58	8	23	
I	567	I3-03 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES	37	20	51	46	3	14	
I	568	I3-04 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES	28	17	38	35	5	9	
I	569	I3-05 DO YOU USE SCOPES TO CHECK ELECTRON TUBES	20	12	26	24	5	6	
I	570	I3-06 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES	46	23	65	56	8	21	
I	571	I3-07 DO YOU USE OR REFER TO CUTOFF	16	10	20	19	2	6	
I	572	I3-08 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING	8	5	10	9	1	5	
I	573	I3-09 DO YOU USE OR REFER TO PEAK CURRENT RATING	10	6	13	11	2	6	
I	574	I3-10 DO YOU USE OR REFER TO TRANSIT TIME	8	5	9	9	1	5	
I	575	I3-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING	8	6	11	10	2	5	
I	576	I3-12 DO YOU USE OR REFER TO SATURATION	17	10	22	20	2	6	
I	577	I3-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE	12	8	16	14	2	5	
I	578	I3-14 DO YOU COMPUTE ACTUAL VALUES OF THE DC PLATE RESISTANCE FOR ELECTRON TUBES	3	3	3	3	1	1	
I	579	I3-15 DO YOU USE OR REFER TO PLATE VOLTAGE	40	24	54	48	8	16	
I	580	I3-16 DO YOU USE OR REFER TO PLATE CURRENT	33	21	44	40	7	16	
I	581	I3-17 DO YOU USE OR REFER TO GRID VOLTAGE	38	23	52	46	7	15	
I	582	I3-18 DO YOU USE OR REFER TO GRID CURRENT	32	20	43	39	6	13	
I	583	I3-19 DO YOU USE OR REFER TO CATHODE VOLTAGE	39	24	53	47	7	17	
I	584	I3-20 DO YOU USE OR REFER TO CATHODE CURRENT	34	21	45	41	7	15	
I	585	I3-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)	7	5	8	8	3	1	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
I	586	J3-22 DO YOU CALCULATE ACTUAL VALUES OF TRIODE AMPLIFICATION FACTORS	2	2	3	2	0	1	
I	587	J3-23 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE, ETC) AMPLIFICATION FACTORS	7	5	8	8	2	1	
I	588	J3-24 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE (G, WHICH IS MEASURED IN MHOS)	6	4	7	7	1	2	
I	589	J3-25 DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE TRANSCONDUCTANCES	3	2	3	3	0	1	
I	590	J3-26 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE	5	3	6	6	1	1	
I	591	J3-27 DO YOU CALCULATE ACTUAL VALUES OF AC PLATE RESISTANCE	2	2	2	2	1	1	
I	592	J3-28 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE	9	6	12	11	2	2	
I	593	J3-29 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES	5	4	6	5	2	2	
I	594	J3-30 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE VOLTAGE FOR A SPECIFIED BIAS	4	3	5	5	2	2	
I	595	J3-31 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE CURRENT FOR A SPECIFIED BIAS	4	3	5	5	2	2	
I	596	J3-32 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR CUTOFF	5	4	6	6	1	2	
I	597	J3-33 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR SATURATION	6	4	7	6	1	2	
I	598	J3-34 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN	36	21	50	44	6	14	
I	599	J3-35 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER EFFICIENCY	21	14	27	25	5	10	
I	600	J3-36 DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	25	13	35	32	4	5	
I	601	J3-37 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	22	12	30	28	4	5	
I	602	J3-38 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	22	14	28	26	4	6	
I	603	J3-39 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	6	5	6	6	2	3	
I	604	J3-40 DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH AS INPUT CAPACITANCE	2	2	3	3	1	1	
I	605	J3-41 DO YOU USE OR REFER TO TUBE SOCKET NOTATION	41	21	58	52	5	15	
I	606	J3-42 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS	44	23	62	55	5	15	
I	607	J3-43 DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE ELECTRON TUBES YOU WORK ON	5	3	7	5	0	3	
I	608	J3-44 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL SUCH AS MANUALS OR CHARTS	29	15	41	36	4	10	
J	609	J1-01 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS IN YOUR PRESENT JOB	40	21	57	49	10	15	ELECTRON TUBE AMPLIFIERS AND CIRCUITS
J	610	J1-02 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	12	8	16	14	5	6	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
J 611	J1-03	DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	9	5	12	10	3	6	
J 612	J1-04	DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	21	11	30	26	3	9	
J 613	J1-05	DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	14	6	20	17	1	8	
J 614	J1-06	DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	19	10	27	23	2	9	
J 615	J1-07	DO YOU TROUBLESHOOT OR REPAIR DON'T KNOW WHICH TYPE OF AMPLIFIER	15	7	23	19	2	6	
J 616	J2-01	DO YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD CATHODE)	22	10	33	29	2	8	SPECIAL PURPOSE ELECTRON TUBES
J 617	J2-02	DO YOU WORK WITH CATHODE-RAY TUBES	18	11	25	21	7	10	
J 618	J2-03	DO YOU USE OR REFER TO THE CHARACTERISTICS OF BEAM POWER TUBES	11	9	14	12	7	7	
J 619	J2-04	DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH BEAM POWER TUBES ARE USED	13	9	18	15	8	8	
J 620	J2-05	DO YOU USE OR REFER TO THE CHARACTERISTICS OF THYRATRONS	5	4	5	5	1	2	
J 621	J2-06	DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH THYRATRONS ARE USED	6	4	7	6	1	1	
J 622	J2-07	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)	11	9	13	11	6	6	
J 623	J2-08	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	10	9	12	11	5	5	
J 624	J2-09	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	9	7	10	9	5	3	
J 625	J2-10	DO YOU USE OR REFER TO PHOSPHOR SCREENS	12	7	16	13	5	5	
J 626	J2-11	DO YOU USE OR REFER TO AQUADAG COATINGS	7	6	8	7	5	2	
J 627	J2-12	DO YOU USE OR REFER TO ELECTRON OPTICS	5	4	5	4	4	1	
J 628	J2-13	DO YOU USE OR REFER TO PERSISTENCE	7	6	8	6	5	1	
J 629	J2-14	DO YOU USE OR REFER TO DECAY TIMES	6	5	7	6	3	2	
J 630	J2-15	DO YOU USE OR REFER TO FLUORESCENCE	7	5	8	7	3	2	
J 631	J2-16	DO YOU USE OR REFER TO PHOSPHORESCENCE	7	5	9	8	3	2	
J 632	J3-01	DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	78	67	87	77	84	83	
J 633	J3-02	DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	66	56	75	66	73	66	HETERODYNING, MODULATION, AND DEMODULATION
J 634	J3-03	DO YOU PERFORM TASKS ON FREQUENCY MIXERS	64	55	72	65	73	59	
J 635	J3-04	DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS	54	48	59	55	55	49	
J 636	J3-05	DO YOU PERFORM TASKS ON REACTANCE MODULATORS	33	28	38	36	32	22	
J 637	J3-06	DO YOU PERFORM TASKS ON MODULATED OSCILLATORS	48	43	52	50	58	36	
K 638	K1-01	DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	15	12	18	17	9	3	AM SYSTEMS
K 639	K1-02	DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS	15	11	18	17	9	3	
K 640	K1-03	DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS	14	10	18	17	9	2	
K 641	K1-04	DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS	14	11	17	16	9	2	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
K 642	K1-05	DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS	14	11	16	16	9	2	
K 643	K1-06	DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE COMPONENTS	12	10	14	13	9	2	
K 644	K1-07	DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE SYSTEMS	13	10	16	15	9	2	
K 645	K1-08	DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE COMPONENTS	12	10	14	14	9	2	
K 646	K1-09	DO YOU PERFORM TASKS ON RF OSCILLATORS	12	10	14	14	10	2	
K 647	K1-10	DO YOU PERFORM TASKS ON RF AMPLIFIERS	12	10	15	14	10	2	
K 648	K1-11	DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	12	10	14	14	10	2	
K 649	K1-12	DO YOU PERFORM TASKS ON POWER AMPLIFIERS	12	9	15	14	10	2	
K 650	K1-13	DO YOU PERFORM TASKS ON LOCAL OSCILLATORS	12	10	14	14	10	2	
K 651	K1-14	DO YOU PERFORM TASKS ON IF AMPLIFIERS	12	10	15	14	10	2	
K 652	K1-15	DO YOU PERFORM TASKS ON DETECTORS	12	9	14	13	11	2	
K 653	K1-16	DO YOU PERFORM TASKS ON DON'T REMEMBER WHICH AM STAGE	4	4	4	4	2	0	
K 654	K1-17	DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN TRANSMITTERS	8	7	9	8	8	2	
K 655	K1-18	DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN TRANSMITTERS	10	8	13	11	8	2	
K 656	K1-19	DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS	13	11	15	14	11	2	
K 657	K1-20	DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS	12	10	14	13	9	2	
K 658	K1-21	DO YOU USE OR REFER TO 2ND HARMONIC DISTORTION	6	6	6	6	6	2	
K 659	K1-22	DO YOU USE OR REFER TO BANDPASS DISTORTION	9	9	9	8	10	2	
K 660	K1-23	DO YOU USE OR REFER TO SQUARE LAW DISTORTION	3	3	2	2	4	2	
K 661	K1-24	DO YOU USE OR REFER TO CO-CHANNEL INTERFERENCE	8	7	9	9	6	1	
K 662	K1-25	DO YOU USE OR REFER TO IMAGE FREQUENCIES IN RECEIVERS	8	8	8	8	8	2	
K 663	K1-26	DO YOU USE OR REFER TO SIGNAL TO IMAGE RATIOS OR IMAGE REJECTION RATIOS	6	6	6	6	5	1	
K 664	K1-27	DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM TRANSMITTER SCHEMATIC DIAGRAMS	13	11	15	15	10	2	
K 665	K1-28	DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM RECEIVER SCHEMATIC DIAGRAMS	14	11	16	15	9	2	
K 666	K2-01	DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	72	61	82	71	77	81	
K 667	K2-02	DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS	71	57	83	70	78	81	FM SYSTEMS
K 668	K2-03	DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS	68	54	81	69	76	78	
K 669	K2-04	DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS	70	58	81	70	77	78	
K 670	K2-05	DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE SYSTEMS	70	57	81	69	77	78	
K 671	K2-06	DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE COMPONENTS	65	55	74	66	76	62	
K 672	K2-07	DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE SYSTEMS	52	43	61	49	67	73	
K 673	K2-08	DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE COMPONENTS	64	54	74	66	74	59	
K 674	K2-09	DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	60	51	68	60	73	59	
K 675	K2-10	DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS	60	52	68	60	77	59	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
K 676	K2-11	DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)	59	51	67	58	72	59	
K 677	K2-12	DO YOU PERFORM TASKS ON POWER AMPLIFIERS	62	54	70	62	77	65	
K 678	K2-13	DO YOU PERFORM TASKS ON RF AMPLIFIERS	64	55	73	64	77	66	
K 679	K2-14	DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	62	52	71	61	76	62	
K 680	K2-15	DO YOU PERFORM TASKS ON IF AMPLIFIERS	67	56	76	67	77	67	
K 681	K2-16	DO YOU PERFORM TASKS ON LIMITERS	56	46	65	57	62	52	
K 682	K2-17	DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS	60	50	69	61	70	56	
K 683	K2-18	DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS	68	57	78	67	78	73	
K 684	K2-19	DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS	68	57	77	67	77	73	
K 685	K3-01	DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS	4	4	5	4	3	2	NUMBERING SYSTEMS
K 686	K3-02	DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS	7	6	8	7	5	6	
K 687	K3-03	DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS	3	3	3	3	3	1	
K 688	K3-04	DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS	3	3	4	3	2	1	
K 689	K3-05	DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS	6	5	7	6	4	5	
K 690	K3-06	DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS	4	3	4	4	2	2	
K 691	K3-07	DO YOU ADD BINARY NUMBERS TO GET A SUM	7	6	7	6	5	5	
K 692	K3-08	DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD	5	4	6	5	3	3	
K 693	K3-09	DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD	6	5	6	5	4	3	
K 694	K3-10	DO YOU ADD OCTAL NUMBERS TO GET A SUM	4	3	4	3	3	3	
L 695	L1-01	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS	12	7	16	11	9	10	LOGIC FUNCTIONS
L 696	L1-02	DO YOU CONSTRUCT TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	5	4	7	5	5	2	
L 697	L1-03	DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	5	4	6	5	5	2	
L 698	L1-04	DO YOU CONSTRUCT TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	5	4	6	5	5	2	
L 699	L1-05	DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS OR GATES	5	4	6	5	5	2	
L 700	L1-06	DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	6	4	8	6	5	5	
L 701	K1-07	DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	6	4	8	6	5	5	
L 702	K1-08	DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	6	4	7	5	5	5	
L 703	L1-09	DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS	5	4	7	5	5	5	
L 704	L1-10	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES	10	7	13	10	7	8	
L 705	L1-11	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES	9	6	12	9	5	8	
L 706	L1-12	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR GATES	10	6	13	10	6	8	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
L 707	L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR EXCLUSIVE OR GATES	8	6	11	8	5	6	
L 708	L2-01 IN YOUR PRESENT JOB: DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS	8	5	10	7	5	6	BOOLEAN EQUATIONS
L 709	L2-02 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS	2	2	2	2	2	1	
L 710	L2-03 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	1	1	1	1	1	1	
L 711	L2-04 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS	2	1	2	2	1	1	
L 712	L2-05 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES	6	3	9	7	2	3	
L 713	L2-06 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS	2	2	3	2	2	1	
L 714	L2-07 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA	3	2	4	3	2	1	
L 715	L2-08 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES	4	3	5	4	3	1	
L 716	L2-09 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	2	2	2	1	1	2	
L 717	L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE	7	4	9	6	4	3	
L 718	L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS	2	2	2	2	2	0	
L 719	L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS	3	3	3	2	4	1	
L 720	L2-13 DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS	6	4	8	6	4	5	
L 721	L2-14 DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS	8	6	10	8	5	7	
L 722	L2-15 DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS	7	5	9	7	5	6	
L 723	L2-16 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS	8	5	10	8	5	6	
L 724	L2-17 DO YOU USE OR REFER TO SINGLE-SHOT MULTIVIBRATOR SYMBOLS	7	5	8	6	5	5	
L 725	L2-18 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT DIAGRAMS	7	5	9	7	5	6	
L 726	L2-19 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES	5	3	6	4	4	3	
L 727	L2-20 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS	5	4	7	5	5	3	
L 728	L2-21 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS	5	4	7	5	5	3	
L 729	L2-22 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS	6	4	9	7	4	3	
L 730	L2-23 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS	5	4	7	5	4	2	
L 731	L2-24 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS	5	4	7	5	4	2	
L 732	L2-25 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS	2	2	3	2	2	2	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
L 733	L3-01	DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB	15	13	17	15	20	8	COUNTERS
L 734	L3-02	DO YOU USE OR REFER TO UP-COUNTERS	11	10	12	10	14	6	
L 735	L3-03	DO YOU USE OR REFER TO DOWN-COUNTERS	9	8	9	7	12	3	
L 736	L3-04	DO YOU USE OR REFER TO SERIAL COUNTERS	7	6	9	7	8	2	
L 737	L3-05	DO YOU USE OR REFER TO PARALLEL COUNTERS	6	5	8	6	5	1	
L 738	L3-06	DO YOU USE OR REFER TO RING COUNTERS	5	4	6	5	5	2	
L 739	L3-07	DO YOU USE OR REFER TO DECADE COUNTERS	7	7	8	7	9	5	
L 740	L3-08	DO YOU USE OR REFER TO COUNT DETECT CIRCUITS	6	6	7	7	8	2	
L 741	L3-09	DO YOU USE OR REFER TO DOWN CLOCKS	7	6	8	7	8	0	
L 742	L3-10	DO YOU USE OR REFER TO UP CLOCKS	8	7	9	8	8	0	
L 743	L3-11	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	6	4	8	6	4	2	
L 744	L3-12	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	5	4	7	5	5	2	
L 745	L3-13	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS	4	3	6	5	3	1	
L 746	L3-14	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS	3	2	4	4	2	1	
L 747	L3-15	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	5	3	7	5	2	2	
L 748	L3-16	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	6	4	8	6	4	1	
L 749	L3-17	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS	6	3	9	6	6	3	
L 750	L3-18	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	4	3	5	4	2	0	
L 751	L3-19	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	3	3	4	3	2	1	
L 752	L3-20	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTERS	3	2	4	3	2	0	
L 753	L3-21	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR OTHER TYPES OF COUNTERS	5	3	6	5	3	3	
L 754	L3-22	DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF DECADE COUNTERS	1	1	2	1	1	0	
L 755	L3-23	DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING COUNTERS FOR SPECIFIC INPUT PULSES	3	2	4	3	3	1	
L 756	L3-24	DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT	3	2	4	3	2	1	
M 757	M1-01	DO YOU WORK WITH SAWTOOTH WAVE GENERATORS	23	23	22	21	28	22	
M 758	M1-02	DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS	11	12	10	9	17	8	TIMING CIRCUITS
M 759	M1-03	DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE FEEDBACK	18	16	19	16	25	14	
M 760	M1-04	DO YOU WORK WITH PULSED OSCILLATORS WITHOUT REGENERATIVE FEEDBACK	15	15	14	14	19	9	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
M 761	M1-05 DO YOU WORK WITH BLOCKING OSCILLATORS	12	14	11	11	10	10	
M 762	M1-06 DO YOU USE OR REFER TO RISE-TIME	17	15	18	16	16	15	
M 763	M1-07 DO YOU USE OR REFER TO FALL OR FLYBACK TIME	16	15	17	16	16	13	
M 764	M1-08 DO YOU USE OR REFER TO SWEEP TIME	24	24	23	22	29	24	
M 765	M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH WAVEFORMS	16	16	14	16	17	12	
M 766	M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH WAVEFORMS	14	13	15	14	14	8	
M 767	M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH WAVEFORMS	14	13	15	15	14	9	
M 768	M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH WAVEFORMS	13	12	14	13	14	8	
M 769	M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB	77	69	83	76	85	72	
M 770	M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS	72	63	80	74	81	66	USE OF SIGNAL GENERATORS
M 771	M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS	63	54	71	64	65	64	
M 772	M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS	55	50	60	56	58	62	
M 773	M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS	39	40	38	40	44	44	
M 774	M2-06 DO YOU USE AUDIO SINE-WAVE GENERATORS	64	56	71	63	69	63	
M 775	M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE	27	27	26	25	34	37	
M 776	M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MH	54	48	59	55	59	51	
M 777	M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MH	58	51	65	60	70	47	
M 778	M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS	46	41	50	46	50	52	
M 779	M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR GENERATORS	28	18	36	29	21	37	MOTORS AND GENERATORS
M 780	M3-02 DO YOU INSPECT MOTORS	25	16	33	26	20	28	
M 781	M3-03 DO YOU CLEAN OR LUBRICATE MOTORS	23	14	30	24	20	20	
M 782	M3-04 DO YOU OPERATE MOTORS	22	14	29	23	17	31	
M 783	M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS	21	15	27	22	20	27	
M 784	M3-06 DO YOU REMOVE OR REPLACE MOTOR PARTS	11	6	16	13	8	6	
M 785	M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS	22	15	28	23	21	24	
M 786	M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS	9	5	13	10	7	2	
M 787	M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS	4	2	5	5	2	1	
M 788	M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES	5	3	7	6	3	3	
M 789	M3-11 DO YOU PERFORM ANY TASKS ON ROTORS	6	4	7	6	3	3	
M 790	M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES	8	5	12	10	5	3	
M 791	M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS	5	3	7	6	2	2	
M 792	M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS	5	3	7	7	2	1	
M 793	M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES	3	2	4	4	1	1	

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS GPSUM1 PAGE 29

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
N 794	MJ3-16	DO YOU DETERMINE OR MEASURE THE MAGNITUDE OF THE FORCE OR TORQUE CREATED BY A MOTOR	1	0	1	1	0	0	
N 795	MJ3-17	DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR	3	2	5	4	1	0	
N 796	MJ3-18	DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS	2	1	3	3	1	0	
N 797	MJ3-19	DO YOU WORK WITH SYNCHRONOUS MOTORS	7	5	9	8	5	7	
N 798	MJ3-20	DO YOU WORK WITH INDUCTION MOTORS	9	5	14	10	6	14	
N 799	MJ3-21	DO YOU WORK WITH SPLIT-PHASE MOTORS	6	5	7	6	8	9	
N 800	MJ3-22	DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS	10	8	12	11	9	10	
N 801	MJ3-23	DO YOU INSPECT GENERATORS	12	5	17	12	5	10	
N 802	MJ3-24	DO YOU CLEAN OR LUBRICATE GENERATORS	8	3	12	8	2	9	
N 803	MJ3-25	DO YOU OPERATE GENERATORS	15	8	21	15	10	20	
N 804	MJ3-26	DO YOU REMOVE OR REPLACE COMPLETE GENERATORS	3	2	4	3	1	5	
N 805	MJ3-27	DO YOU REMOVE OR REPLACE GENERATOR PARTS	3	1	4	3	0	5	
N 806	MJ3-28	DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS	6	3	9	6	2	7	
N 807	MJ3-29	DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS	2	1	2	2	0	2	
N 808	MI-01	DO YOU WORK WITH METERS IN YOUR PRESENT JOB	79	70	87	78	79	84	
N 809	MI-02	DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF PERMANENT MAGNETS	18	17	18	18	17	10	METER MOVEMENTS
N 810	MI-03	DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF MOVING COILS	20	20	22	20	21	13	
N 811	MI-04	DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS	18	16	19	18	14	14	
N 812	MI-05	DO YOU READ METER SCALES	81	73	88	79	83	84	
N 813	MI-06	DO YOU EXTEND THE RANGE OF AMMETERS	32	29	34	31	44	29	
N 814	MI-07	DO YOU ZERO OHMMETERS	80	71	87	79	84	83	
N 815	MI-08	DO YOU ZERO AMMETERS	40	34	45	39	47	49	
N 816	MI-09	DO YOU EXTEND THE RANGE OF VOLTMETERS	49	41	55	47	58	55	
N 817	MI-10	DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)	45	39	50	44	42	60	
N 818	MJ2-01	DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB	8	7	9	7	11	7	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS
N 819	MJ2-02	DO YOU INSPECT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	7	5	8	6	10	8	
N 820	MJ2-03	DO YOU CLEAN MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	6	4	8	7	8	6	
N 821	MJ2-04	DO YOU ADJUST MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	5	4	6	4	8	6	
N 822	MJ2-05	DO YOU TROUBLESHOOT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	6	4	8	6	8	6	
N 823	MJ2-06	DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	6	5	7	6	9	6	
N 824	MJ2-07	DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS	5	4	5	4	8	6	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
N	825	N2-08 DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS	1	1	2	1	0	3	
N	826	N2-09 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	3	3	3	3	2	3	
N	827	N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	3	2	3	3	3	5	
N	828	N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS FOR MAGNETIC AMPLIFIERS	3	4	3	3	3	2	
N	829	N2-12 DO YOU USE OR REFER TO COERCIVE FORCE IN SATURABLE REACTORS	1	1	1	1	1	1	
N	830	N2-13 DO YOU USE OR REFER TO RESIDUAL MAGNETISM IN SATURABLE REACTORS	2	2	1	2	2	1	
N	831	N2-14 DO YOU USE OR REFER TO FLUX DENSITY IN SATURABLE REACTORS	2	2	2	2	2	1	
N	832	N2-15 DO YOU USE OR REFER TO POINT OF SATURATION IN SATURABLE REACTORS	2	3	2	2	2	2	
N	833	N2-16 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC SYMBOLS	5	4	5	5	4	6	
N	834	N3-01 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT JOB	26	28	25	23	34	24	WAVESHAPING CIRCUITS
N	835	N3-02 DO YOU USE OR REFER TO TRANSIENT INTERVALS	11	12	10	10	11	12	
N	836	N3-03 DO YOU USE OR REFER TO PULSE WIDTH (PW)	19	20	18	17	23	16	
N	837	N3-04 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	13	15	12	11	20	10	
N	838	N3-05 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	14	15	12	12	20	9	
N	839	N3-06 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS	14	16	13	12	20	13	
N	840	N3-07 DO YOU USE OR REFER TO INTEGRATING CIRCUITS	14	16	12	13	19	9	
N	841	N3-08 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT	11	12	11	11	13	9	
N	842	N3-09 DO YOU DETERMINE WHETHER AN LR OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION	6	7	6	6	5	6	
N	843	N3-10 DO YOU WORK WITH SQUARE WAVE GENERATORS	20	22	17	18	29	17	
N	844	N3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATORS	10	11	8	9	15	5	
O	845	O1-01 DO YOU WORK ON SINGLE SIDEBAND SYSTEMS IN YOUR PRESENT JOB	23	21	25	25	23	13	SINGLE SIDEBAND SYSTEMS
O	846	O1-02 DO YOU INSPECT SSB TRANSMIT OR RECEIVE SYSTEMS	23	20	25	25	22	9	
O	847	O1-03 DO YOU CLEAN SSB TRANSMIT OR RECEIVE SYSTEMS	22	19	24	24	23	7	
O	848	O1-04 DO YOU ALIGN SSB TRANSMIT OR RECEIVE SYSTEMS	21	20	22	22	22	7	
O	849	O1-05 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE SYSTEMS	22	20	24	24	23	8	
O	850	O1-06 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE COMPONENTS	20	19	21	21	21	8	
O	851	O1-07 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE SYSTEMS	19	17	21	21	22	8	
O	852	O1-08 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE COMPONENTS	20	19	21	21	22	8	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
0	853	01-09 DO YOU PERFORM TASKS ON SSB AUDIO AMPLIFIERS	19	18	19	19	21	9	
0	854	01-10 DO YOU PERFORM TASKS ON SSB BALANCED MODULATORS	18	17	19	19	19	9	
0	855	01-11 DO YOU PERFORM TASKS ON SSB CARRIER OSCILLATORS	18	17	18	19	17	12	
0	856	01-12 DO YOU PERFORM TASKS ON SSB LC FILTERS	14	13	14	15	12	10	
0	857	01-13 DO YOU PERFORM TASKS ON SSB CRYSTAL FILTERS	14	13	14	15	12	9	
0	858	01-14 DO YOU PERFORM TASKS ON SSB MECHANICAL FILTERS	13	13	14	14	13	9	
0	859	01-15 DO YOU PERFORM TASKS ON SSB OSCILLATORS	19	18	20	20	20	10	
0	860	01-16 DO YOU PERFORM TASKS ON SSB MIXERS	19	18	20	20	21	12	
0	861	01-17 DO YOU PERFORM TASKS ON SSB DRIVERS	17	16	18	18	20	9	
0	862	01-18 DO YOU PERFORM TASKS ON SSB POWER AMPLIFIERS	18	17	20	19	20	10	
0	863	01-19 DO YOU PERFORM TASKS ON SSB RF AMPLIFIERS	18	17	19	19	20	9	
0	864	01-20 DO YOU PERFORM TASKS ON SSB FREQUENCY CONVERTERS	16	15	17	17	18	9	
0	865	01-21 DO YOU PERFORM TASKS ON SSB IF AMPLIFIERS	18	17	19	19	20	10	
0	866	01-22 DO YOU PERFORM TASKS ON SSB DEMODULATORS	19	17	20	20	21	12	
0	867	01-23 DO YOU PERFORM TASKS ON SSB DON'T REMEMBER WHICH SSB SYSTEM STAGES	6	6	5	5	8	2	
0	868	01-24 DO YOU USE OR REFER TO SELECTIVE FADING	8	7	8	8	6	6	
0	869	01-25 DO YOU USE OR REFER TO PEAK POWER	14	12	17	15	12	8	
0	870	01-26 DO YOU USE OR REFER TO FREQUENCY STABILITY	17	16	18	18	18	8	
0	871	01-27 DO YOU USE OR REFER TO RESPONSE CURVES FOR BANDWIDTH FILTERS	11	11	11	12	13	7	
0	872	01-28 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB TRANSMITTERS	8	5	10	9	8	3	
0	873	01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB TRANSMITTER SCHEMATIC DIAGRAMS	18	16	21	19	19	10	
0	874	01-30 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB RECEIVER SCHEMATIC DIAGRAMS	19	16	21	20	15	10	
0	875	02-01 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR PRESENT JOB	4	4	5	3	5	12	PULSE MODULATION SYSTEMS
0	876	02-02 DO YOU INSPECT PULSE MODULATION SYSTEMS	4	3	4	3	5	12	
0	877	02-03 DO YOU CLEAN PULSE MODULATION SYSTEMS	4	3	4	3	5	10	
0	878	02-04 DO YOU ALIGN PULSE MODULATION SYSTEMS	4	4	4	3	5	10	
0	879	02-05 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS	4	3	4	3	5	10	
0	880	02-06 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM COMPONENTS	3	3	3	2	5	8	
0	881	02-07 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS	4	4	3	3	5	9	
0	882	02-08 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM COMPONENTS	3	3	3	2	5	7	
0	883	02-09 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM) SYSTEMS	2	1	2	1	2	6	
0	884	02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM) SYSTEMS	2	1	2	1	2	6	
0	885	02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM) SYSTEMS	2	2	3	1	3	9	
0	886	02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) SYSTEMS	2	2	1	2	2	2	
0	887	02-13 DO YOU WORK ON LINE PULSING MODULATION SYSTEMS	1	1	1	1	1	2	
0	888	02-14 DO YOU WORK ON DON'T REMEMBER WHICH TYPE OF MODULATION SYSTEM	1	1	1	1	2	1	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
0	889	02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLIES	3	3	3	3	5	9	
0	890	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODES	2	2	1	2	3	3	
0	891	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORKS	3	3	3	2	5	9	
0	892	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMERS	3	2	3	2	2	7	
0	893	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRONS	1	1	0	1	1	0	
0	894	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMERS	2	2	1	2	3	1	
0	895	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBES	2	1	2	1	2	5	
0	896	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIERS	3	3	2	2	5	9	
0	897	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTERS	3	3	2	2	5	6	
0	898	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIERS	3	3	2	2	5	8	
0	899	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTORS	3	3	2	2	5	8	
0	900	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIERS	1	2	1	1	3	5	
0	901	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIERS	1	2	0	1	2	1	
0	902	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DON'T REMEMBER WHICH PULSE MODULATION SYSTEM STAGES	2	2	1	2	2	2	
0	903	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	1	1	1	1	2	5	
0	904	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	2	1	2	1	3	6	
0	905	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW)	3	3	3	3	4	8	
0	906	02-32 DO YOU USE OR REFER TO PULSE SHAPE	3	2	3	2	4	8	
0	907	02-33 DO YOU USE OR REFER TO PEAK POWER	2	2	2	2	3	5	
0	908	02-34 DO YOU USE OR REFER TO AVERAGE POWER	2	2	2	2	3	6	
0	909	02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	1	1	0	1	2	1	
0	910	02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	1	1	1	1	2	2	
0	911	02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS	1	1	0	1	2	1	
0	912	02-38 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS	3	2	3	2	4	8	
0	913	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS	3	3	3	2	5	7	
0	914	03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB	42	52	33	32	86	69	
0	915	03-02 DO YOU INSPECT ANTENNAS	36	50	29	26	86	66	ANTENNAS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006
0 916	03-03 DO YOU CLEAN ANTENNAS	31	47	17	20	86	53
0 917	03-04 DO YOU PHYSICALLY ALIGN ANTENNAS	30	47	15	18	86	62
0 918	03-05 DO YOU ELECTRICALLY ALIGN ANTENNAS	21	32	12	14	58	38
0 919	03-06 DO YOU TROUBLESHOOT TO ANTENNAS	30	39	22	22	70	47
0 920	03-07 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS	21	32	12	13	62	41
0 921	03-08 DO YOU REMOVE OR INSTALL ANTENNAS	31	48	16	20	87	56
0 922	03-09 DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS	28	42	15	17	77	56
0 923	03-10 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES	14	22	7	9	39	16
0 924	03-11 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES	14	22	7	9	37	16
0 925	03-12 DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS	10	16	6	7	25	13
0 926	03-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS INDUCTIVE LOADS TO THE GENERATOR	6	8	4	5	8	7
0 927	03-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR	5	7	3	4	8	6
0 928	03-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR	5	6	3	4	6	5
0 929	03-16 DO YOU WORK WITH HERTZ ANTENNAS	4	5	4	4	7	2
0 930	03-17 DO YOU WORK WITH MARCONI ANTENNAS	3	4	3	3	5	1
0 931	03-18 DO YOU WORK WITH BROADSIDE ARRAYS	3	4	1	2	5	0
0 932	03-19 DO YOU WORK WITH END-FIRE ARRAYS	2	2	1	1	4	3
0 933	03-20 DO YOU WORK WITH CARDIOID ARRAYS	1	2	1	1	2	0
0 934	03-21 DO YOU WORK WITH COLLINEAR ARRAYS	2	3	1	2	3	2
0 935	03-22 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS	6	8	4	5	11	5
0 936	03-23 DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS	3	5	1	2	7	2
0 937	03-24 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS	9	15	4	7	21	7
0 938	03-25 DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS	5	8	2	4	11	3
0 939	03-26 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION	5	7	2	4	11	3
0 940	03-27 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD	3	6	1	3	8	1
0 941	03-28 ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED	13	17	9	9	32	22
0 942	03-29 ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED	4	6	2	3	9	5
0 943	03-30 DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON	18	27	10	9	61	36
0 944	03-31 DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT, ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS	5	8	3	4	6	2

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
O	945	O3-32 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS	6	8	5	5	13	7	
O	946	O3-33 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS	5	6	4	4	10	6	
O	947	O3-34 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS	9	11	7	6	18	14	
O	948	O3-35 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DON'T REMEMBER WHAT KIND OF ELEMENTS	13	19	9	11	29	16	
O	949	O3-36 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS	27	33	21	20	55	42	
O	850	O3-37 DO YOU WORK ON BIDIRECTIONAL ANTENNAS	9	10	9	9	10	13	
O	851	O3-38 DO YOU WORK ON DON'T REMEMBER THE DIRECTIONALITY	7	9	4	5	17	8	
O	852	O3-39 DO YOU WORK WITH ROTAR ANTENNA ARRAYS	2	3	2	3	5	0	
P	953	P1-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES	34	30	37	34	36	34	TRANSMISSION LINES
P	954	P1-02 DO YOU REFER TO OR USE COPPER LOSS OR I2R LOSS IN TRANSMISSION LINES	5	4	5	5	3	5	
P	955	P1-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES	8	8	7	8	7	6	
P	956	P1-04 DO YOU REFER TO OR USE RADIATION LOSS IN TRANSMISSION LINES	12	13	10	12	15	8	
P	957	P1-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN TRANSMISSION LINES	9	8	9	9	8	3	
P	958	P1-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION LINES	8	7	9	9	8	6	
P	959	P1-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES	19	16	22	18	23	24	
P	960	P1-08 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES	14	13	15	14	15	16	
P	961	P1-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES	8	7	8	8	6	7	
P	962	P1-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES	32	28	36	32	33	36	
P	963	P1-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES	14	13	14	15	13	9	
P	964	P1-12 DO YOU TROUBLESHOOT TRANSMISSION LINES	25	19	30	24	25	30	
P	965	P1-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)	4	2	5	4	2	2	
P	966	P1-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS	7	5	8	7	5	6	
P	967	P1-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS	12	10	14	13	9	10	
P	968	P1-16 DO YOU MEASURE STANDING WAVE RATIOS (SR) OF TRANSMISSION LINES	13	10	16	14	11	13	
P	969	P1-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	7	5	9	8	5	6	
P	970	P1-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS	3	2	4	3	2	2	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
P 971	P1-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS	12	8	16	13	9	8	
P 972	P1-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING	3	3	3	3	4	3	
P 973	P1-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA	5	4	6	5	6	5	
P 974	P1-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (ZO) OF TRANSMISSION LINES	15	12	18	16	11	17	
P 975	P1-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (ZO) OF TRANSMISSION LINES	3	2	3	3	2	2	
P 976	P1-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF TRANSMISSION LINES	6	5	6	6	5	2	
P 977	P1-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES	2	1	2	2	1	1	
P 978	P1-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES	3	3	3	3	4	2	
P 979	P1-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTH FOR GIVEN FREQUENCIES	3	3	4	3	2	6	
P 980	P1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES	5	4	6	5	2	6	
P 981	P1-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES	13	10	17	13	11	21	
P 982	P1-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES	11	10	13	12	10	8	
P 983	P1-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING	7	5	8	6	7	8	
P 984	P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB	53	53	53	49	80	66	WAVEGUIDES AND CAVITY RESONATORS
P 985	P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS	48	50	46	43	81	64	
P 986	P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS	37	42	33	33	71	47	
P 987	P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS	16	24	9	11	43	28	
P 988	P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS	12	17	8	9	31	20	
P 989	P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS	25	16	32	30	10	13	
P 990	P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS	10	8	12	12	9	9	
P 991	P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS	28	29	27	25	45	41	
P 992	P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES	30	43	19	21	81	55	
P 993	P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS	37	44	31	30	81	47	
P 994	P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS	36	41	31	28	81	50	
P 995	P2-12 DO YOU REMOVE OR INSTALL E BENDS	10	14	8	9	24	10	
P 996	P2-13 DO YOU REMOVE OR INSTALL H BENDS	10	14	8	9	23	9	
P 997	P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS	13	16	11	12	27	9	
P 998	P2-15 DO YOU REMOVE OR INSTALL CHOKE JOINTS	8	9	8	7	14	7	
P 999	P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS	5	7	3	5	10	1	
P1000	P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS	31	37	27	27	65	41	
P1001	P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS	12	12	12	12	14	12	
P1002	P2-19 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES	7	9	5	6	11	5	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006
P1003	P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES	7	9	5	6	10	6
P1004	P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES	10	10	10	9	15	7
P1005	P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES	7	8	6	6	8	7
P1006	P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES	5	6	4	5	5	3
P1007	P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS	4	5	3	4	6	2
P1008	P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS	4	4	3	4	6	1
P1009	P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS	4	5	3	4	5	1
P1010	P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS OF THE OPERATING FREQUENCY	4	5	4	4	5	3
P1011	P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 USED AS AN AVERAGE	3	3	3	3	4	1
P1012	P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS) WHICH WAVEGUIDES ARE MADE OF	6	7	6	7	8	5
P1013	P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION	3	5	2	3	6	2
P1014	P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES	5	5	4	4	5	5
P1015	P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES	3	3	2	3	2	2
P1016	P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES	2	2	1	2	2	0
P1017	P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES	2	3	2	2	3	0
P1018	P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	13	13	12	13	17	16
P1019	P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	15	13	16	15	16	12
P1020	P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	14	15	14	14	17	13
P1021	P2-38 ARE APERTURES (WINDOWS OR IRISES) USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	22	20	24	20	29	29
P1022	P2-39 ARE DON'T REMEMBER THE KIND OF ENERGY COUPLING USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	17	18	16	16	28	17
P1023	P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	2	3	1	2	2	2
P1024	P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	1	2	1	2	2	1

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
P1025	P2-42 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	1	2	1	1	2	0	
P1026	P2-43 ARE CHOKE JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	12	11	12	12	15	7	
P1027	P2-44 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	4	5	2	3	5	2	
P1028	P2-45 ARE DON'T REMEMBER THE KIND OF JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	23	24	22	22	32	27	
P1029	P2-46 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING	18	18	18	18	25	16	
P1030	P2-47 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING	15	15	15	14	20	16	
P1031	P2-48 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING	11	12	10	11	17	8	
P1032	P2-49 DO YOU TUNE CAVITY RESONATORS USING DON'T REMEMBER THE METHOD OF TUNING	15	17	13	15	22	14	
P1033	P2-50 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY RESONATORS	15	12	18	17	17	13	
P1034	P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS, TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR MAGNETRONS	65	55	73	63	83	78	MICROWAVE AMPLIFIERS AND OSCILLATORS
P1035	P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE	16	15	18	17	19	13	
P1036	P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME	14	13	15	14	12	15	
P1037	P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE	14	12	15	14	16	13	
P1038	P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL CIRCUITRY	24	23	25	24	33	21	
P1039	P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY MODULATION	31	29	33	30	42	27	
P1040	P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING	32	30	33	31	45	26	
P1041	P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS	9	7	11	11	5	5	
P1042	P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS	21	23	20	18	39	30	
P1043	P3-10 DO YOU WORK WITH REFLEX KLYSTRONS	40	31	46	42	43	29	
P1044	P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)	48	48	48	41	83	73	
P1045	P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC AMPLIFIERS	6	6	6	6	10	5	
P1046	P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS	11	12	10	11	17	9	
P1047	P3-14 DO YOU WORK WITH MAGNETRONS	2	1	2	2	2	2	
P1048	P3-15 DO YOU INSPECT KLYSTRONS OR TWT	59	50	67	57	80	73	
P1049	P3-16 DO YOU CLEAN KLYSTRONS OR TWT	48	41	54	47	72	50	
P1050	P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY	51	41	59	50	66	60	
P1051	P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY	58	51	65	57	75	72	
P1052	P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR TWT	62	53	69	59	84	74	
P1053	P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT	49	44	54	46	77	65	
P1054	P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT	60	50	69	59	80	74	
P1055	P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS	24	24	25	23	39	24	
P1056	P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS	13	13	13	13	17	12	
P1057	P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS	12	11	12	12	16	9	
P1058	P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS	11	12	10	11	17	8	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006
P1059	P3-26 DO YOU TUNE PARAMETRIC AMPLIFIERS	11	12	10	11	17	8
P1060	P3-27 DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS	12	13	11	12	17	9
P1061	P3-28 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS	11	12	11	11	17	9
P1062	P3-29 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER	11	13	11	11	17	9
P1063	P3-30 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS	9	10	7	9	13	7
P1064	P3-31 DO YOU INSPECT MAGNETRONS	1	1	2	2	1	2
P1065	P3-32 DO YOU CLEAN MAGNETRONS	1	1	1	1	1	1
P1066	P3-33 DO YOU ADJUST MAGNETRONS	1	1	1	2	1	1
P1067	P3-34 DO YOU TUNE MAGNETRONS	1	1	1	2	1	1
P1068	P3-35 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS	1	1	1	1	1	1
P1069	P3-36 DO YOU TROUBLESHOOT MAGNETRONS	1	2	1	2	1	1
P1070	P3-37 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON	1	1	1	1	1	1
P1071	P3-38 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS	1	1	1	1	1	1
P1072	P3-39 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES	8	7	10	9	7	8
P1073	P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES	7	5	8	7	5	3
P1074	P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS	7	5	8	7	5	3
P1075	P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS	6	5	6	6	5	2
P1076	P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIFT SPACES	6	5	6	6	5	2
P1077	P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS	6	6	7	6	7	2
P1078	P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES	6	6	7	6	8	2
P1079	P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS	8	7	9	8	8	2
P1080	P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES	8	7	9	8	8	5
P1081	P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REPELLER (REFLECTOR) PLATES	29	21	36	31	27	19
P1082	P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS	24	19	30	26	22	16
P1083	P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS	16	13	19	17	16	13
P1084	P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES	28	24	33	29	31	17
P1085	P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS	15	14	17	16	17	10
P1086	P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS	28	23	33	28	34	20
P1087	P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES	29	23	34	29	30	21

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
P1088	P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON OUTPUT LEADS	23	19	28	29	20	16	
P1089	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	39	35	39	29	62	41	
P1090	P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	33	33	34	29	58	40	
P1091	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	24	25	24	21	42	28	
P1092	P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	39	33	35	29	57	42	
P1093	P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELIXES	36	35	37	31	63	47	
P1094	P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	30	28	32	26	48	37	
P1095	P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	23	23	24	19	41	27	
P1096	P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	24	25	23	21	39	26	
P1097	P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	5	5	5	5	9	2	
P1098	P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	5	4	5	5	5	1	
P1099	P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLER CAVITIES	4	3	4	4	4	1	
P1100	P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR DIODES	8	8	8	7	10	6	
P1101	P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	5	6	5	5	9	1	
P1102	P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE-BIAS BATTERIES	2	2	2	2	3	1	
P1103	P3-70 DO YOU PERFORM TASKS ON ANODES	1	1	1	1	1	1	
P1104	P3-71 DO YOU PERFORM TASKS ON ANODE COOLING FINS	1	1	1	1	1	1	
P1105	P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	1	1	1	1	1	1	
P1106	P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	1	1	1	1	1	1	
P1107	P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	1	1	1	1	1	1	
P1108	P3-75 DO YOU PERFORM TASKS ON CATHODES	1	1	1	1	1	1	
P1109	P3-76 DO YOU PERFORM TASKS ON MAGNETS	1	1	1	1	1	1	
Q1110	Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	6	4	8	7	4	0	
Q1111	Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	8	6	10	9	5	0	REGISTERS
Q1112	Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	8	5	10	9	4	0	
Q1113	Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	6	4	8	7	3	0	
Q1114	Q1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	7	5	10	8	3	0	
Q1115	Q1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	6	3	7	6	2	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
Q1116	Q1-07 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES HAVE PASSED	7	5	8	7	5	0	
Q1117	Q2-01 DO YOU WORK WITH DIGITAL COUNTERS, REGISTERS, OR STORAGE DEVICES IN YOUR PRESENT JOB	7	4	7	8	5	3	STORAGE DEVICES
Q1118	Q2-02 DO YOU USE OR REFER TO DELAY LINES	2	2	3	3	1	0	
Q1119	Q2-03 DO YOU USE OR REFER TO MAGNETIC CORES	1	1	2	2	0	0	
Q1120	Q2-04 DO YOU USE OR REFER TO MAGNETIC DRUMS	1	0	0	1	0	0	
Q1121	Q2-05 DO YOU USE OR REFER TO MAGNETIC TAPES	1	1	0	1	0	0	
Q1122	Q2-06 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OR MEMORY SYSTEMS	1	1	2	2	1	0	
Q1123	Q2-07 DO YOU USE OR REFER TO WORD CAPACITY OF MEMORY SYSTEMS	1	1	2	1	1	1	
Q1124	Q2-08 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS	1	1	0	1	1	1	
Q1125	Q2-09 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES	1	1	1	1	1	0	
Q1126	Q3-01 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-ANALOG (D/A) CONVERTERS, ANALOG-TO-DIGITAL (A/D) CONVERTERS, OR BINARY-TO-DECIMAL READOUT CONVERTERS	2	2	1	1	4	0	DIGITAL TO ANALOG CONVERTERS
Q1127	Q3-02 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT VOLTAGES	0	1	0	0	1	0	
Q1128	Q3-03 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE RESISTORS	0	0	0	0	0	0	
Q1129	Q3-04 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS	0	1	0	0	2	0	
Q1130	Q3-05 DO YOU PERFORM SAMPLE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	1	1	0	1	1	0	
Q1131	Q3-06 DO YOU PERFORM HOLD FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	1	1	0	1	1	0	
Q1132	Q3-07 DO YOU PERFORM COMPARE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	1	1	0	0	2	0	
Q1133	Q3-08 DO YOU PERFORM DIGITIZE FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	0	1	0	0	1	0	
Q1134	Q3-09 DO YOU PERFORM DON'T REMEMBER WHICH FUNCTION TASKS ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS	0	1	0	0	1	0	
Q1135	Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D CONVERTERS	1	0	1	1	1	0	
Q1136	Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D CONVERTERS	1	1	1	1	2	0	
Q1137	Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D CONVERTERS	1	1	1	1	2	0	
Q1138	Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D CONVERTERS	1	1	1	1	2	0	
Q1139	Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-DIGITAL (A/D) CONVERTERS	0	0	0	0	1	0	

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
R1190	R1-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR PRESENT JOB	0	0	0	1	0	0	PHANTASTRONS
R1191	R2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER CIRCUITS	31	31	31	30	39	26	
R1192	R2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER SCHEMATIC DIAGRAMS	23	23	24	22	30	17	SCHMITT TRIGGERS
R1193	R2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS	17	15	19	16	21	17	
R1194	R3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR CABLES	40	37	42	40	37	44	CABLE FABRICATION
R1195	R3-02 DO YOU FABRICATE COAXIAL CABLES	60	55	65	62	67	60	
S1146	S1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON VISUAL READOUT SYSTEMS	11	9	12	12	5	5	
S1147	S1-02 DO YOU PERFORM ANY TASKS ON NIXIE LIGHTS OR NIXIE LIGHT DECODER SYSTEMS	3	2	3	3	2	0	INPUT/OUTPUT DEVICES
S1148	S1-03 DO YOU ANALYZE NIXIE LIGHT DECODER SYSTEMS USING BOOLEAN ALGEBRA	1	1	1	0	0	0	
S1149	S2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB	2	1	3	2	0	1	PHOTO SENSITIVE DEVICES
S1150	S3-01 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS	2	2	2	2	1	1	
S1151	S3-02 DO YOU MEASURE EXCITATION FREQUENCIES	1	1	1	1	0	0	
S1152	S3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS	1	1	0	1	0	1	
S1153	S3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES	1	1	0	1	0	0	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)
S1154	S3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIPS	1	1	0	1	0	1	
S1155	S3-06 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	1	1	1	1	2	1	
S1156	S3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	2	2	2	2	2	1	
S1157	S3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	2	2	2	2	2	0	
S1158	S3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	2	2	2	2	2	0	
T1159	T1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS	0	0	0	0	0	1	
T1160	T1-02 DO YOU INSPECT INFRARED SYSTEMS	0	0	0	0	0	0	INFRARED
T1161	T1-03 DO YOU CLEAN INFRARED SYSTEMS	0	0	0	0	0	0	
T1162	T1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS	0	0	0	0	0	0	
T1163	T1-05 DO YOU OPERATE INFRARED SYSTEMS	0	0	0	0	0	0	
T1164	T1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS	0	0	0	0	0	0	
T1165	T1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	0	0	
T1166	T1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	0	0	
T1167	T1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	0	0	
T1168	T1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	BY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
T1169	T1-11 DO YOU USE OR REFER TO FAR REGION	0	0	0	0	0	0	
T1170	T1-12 DO YOU USE OR REFER TO INTERMEDIATE REGION	0	0	0	0	0	0	
T1171	T1-13 DO YOU USE OR REFER TO NEAR REGION	0	0	0	0	0	0	
T1172	T1-14 DO YOU USE OR REFER TO MICRON	0	0	0	0	0	0	
T1173	T1-15 DO YOU USE OR REFER TO GRAY BODIES	0	0	0	0	0	0	
T1174	T1-16 DO YOU USE OR REFER TO BLACK BODIES	0	0	0	0	0	0	
T1175	T1-17 DO YOU USE OR REFER TO ABSORPTION	0	0	0	0	0	0	
T1176	T1-18 DO YOU USE OR REFER TO SCATTERING	0	0	0	0	0	0	
T1177	T1-19 DO YOU USE OR REFER TO ABSOLUTE ZERO	0	0	0	0	0	0	
T1178	T1-20 DO YOU PERFORM TASKS ON BLITZ	0	0	0	0	0	0	
T1179	T1-21 DO YOU PERFORM TASKS ON TARGET BUTTONS	0	0	0	0	0	0	
T1180	T1-22 DO YOU PERFORM TASKS ON ERECTOR LENSES	0	0	0	0	0	0	
T1181	T1-23 DO YOU PERFORM TASKS ON OCULAR LENSES	0	0	0	0	0	0	
T1182	T1-24 DO YOU PERFORM TASKS ON CORRECTION LENSES	0	0	0	0	0	0	
T1183	T1-25 DO YOU PERFORM TASKS ON FILTERS	0	0	0	0	0	0	
T1184	T1-26 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS	0	0	0	0	0	0	
T1185	T1-27 DO YOU PERFORM TASKS ON PLANE MIRRORS	0	0	0	0	0	0	
T1186	T2-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS	0	0	0	0	0	0	LASERS
T1187	T2-02 DO YOU INSPECT LASER SYSTEMS	0	0	0	0	0	0	
T1188	T2-03 DO YOU CLEAN LASER SYSTEMS	0	0	0	0	0	0	
T1189	T2-04 DO YOU OPERATE LASER SYSTEMS	0	0	0	0	0	0	
T1190	T2-05 DO YOU OPERATE LASER SYSTEMS	0	0	0	0	0	0	
T1191	T2-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS	0	0	0	0	0	0	
T1192	T2-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0	0	0	0	
T1193	T2-08 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS	0	0	0	0	0	0	
T1194	T2-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0	0	0	0	
T1195	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS	0	0	0	0	0	0	
T1196	T2-11 DO YOU USE OR REFER TO ANGSTROMS (A)	0	0	0	0	0	0	
T1197	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS	0	0	0	0	0	0	
T1198	T2-13 DO YOU USE OR REFER TO GROUND STATE	0	0	0	0	0	0	
T1199	T2-14 DO YOU USE OR REFER TO EXCITED STATE	0	0	0	0	0	0	
T1200	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION	0	0	0	0	0	0	
T1201	T2-16 DO YOU USE OR REFER TO PHOTONS	0	0	0	0	0	0	
T1202	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSION	0	0	0	0	0	0	
T1203	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSION	0	0	0	0	0	0	
T1204	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE	0	0	0	0	0	0	
T1205	T2-20 DO YOU USE OR REFER TO INVERSION LEVEL	0	0	0	0	0	0	
T1206	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC	0	0	0	0	0	0	
T1207	T2-22 DO YOU WORK WITH ACTIVE MATERIALS	0	0	0	0	0	0	
T1208	T2-23 DO YOU WORK WITH PUMPING SOURCES	0	0	0	0	0	0	
T1209	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS	0	0	0	0	0	0	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
T1210	T2-25	DO YOU WORK WITH HALF SILVERED (92% REFLECTIVE) MIRRORS	0	0	0	0	0	0	
T1211	T2-26	DO YOU WORK WITH HELICAL FLASHTUBES	0	0	0	0	0	0	
T1212	T2-27	DO YOU WORK WITH RUBY	0	0	0	0	0	0	
T1213	T2-28	DO YOU WORK WITH HELIUM-NEON	0	0	0	0	0	0	
T1214	T2-29	DO YOU WORK WITH HELIUM-XENON	0	0	0	0	0	0	
T1215	T2-30	DO YOU WORK WITH XENON	0	0	0	0	0	0	
T1216	T2-31	DO YOU WORK WITH CESIUM-HELIUM	0	0	0	0	0	0	
T1217	T2-32	DO YOU WORK WITH ARGON	0	0	0	0	0	0	
T1218	T2-33	DO YOU WORK WITH NEODYMIUM IN GLASS	0	0	0	0	0	0	
T1219	T2-34	DO YOU WORK WITH GALLIUM ARSENIDE	0	0	0	0	0	0	
T1220	T3-01	IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE (DVST) OR MULTIPLE MODE STORAGE TUBES (MMST)	0	0	0	0	0	0	DISPLAY TUBES
T1221	T3-02	DO YOU INSPECT DVST OR MMST	0	0	0	0	0	0	
T1222	T3-03	DO YOU CLEAN DVST OR MMST	0	0	0	0	0	0	
T1223	T3-04	DO YOU ADJUST OR CALIBRATE DVST OR MMST	0	0	0	0	0	0	
T1224	T3-05	DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST	0	0	0	0	0	0	
T1225	T3-06	DO YOU TROUBLESHOOT DVST OR MMST CIRCUITS	0	0	0	0	0	1	
T1226	T3-07	DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS	0	0	0	0	0	0	
T1227	T3-08	DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF DVST	0	0	0	0	0	0	
T1228	T3-09	DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF MMST	0	0	0	0	0	0	
T1229	T3-10	DO YOU PERFORM TASKS ON FLOOD GUNS	0	0	0	0	0	0	
T1230	T3-11	DO YOU PERFORM TASKS ON WRITE GUNS	0	0	0	0	0	0	
T1231	T3-12	DO YOU PERFORM TASKS ON ATTACK GUNS	0	0	0	0	0	0	
T1232	T3-13	DO YOU PERFORM TASKS ON ERASE GUNS	0	0	0	0	0	0	
T1233	T3-14	DO YOU PERFORM TASKS ON STORAGE GRIDS	0	0	0	0	0	0	
U1234	U1-01	IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING TASKS	1	1	0	0	2	0	
U1235	U1-02	DO YOU USE OR REFER TO DECIMAL SYSTEMS	0	0	0	0	1	1	PROGRAMMING
U1236	U1-03	DO YOU USE OR REFER TO PROGRAMS	1	1	0	0	2	0	
U1237	U1-04	DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS	0	0	0	0	1	0	
U1238	U1-05	DO YOU USE OR REFER TO 8-4-2-1 SYSTEMS	0	0	0	0	0	0	
U1239	U1-06	DO YOU USE OR REFER TO FOUR SYSTEMS	0	0	0	0	0	0	
U1240	U1-07	DO YOU USE OR REFER TO BINARY SYSTEMS	1	1	0	0	1	0	
U1241	U1-08	DO YOU USE OR REFER TO TIME-SHARING	0	0	0	0	2	0	
U1242	U1-09	DO YOU USE OR REFER TO DATA WORDS	0	1	0	0	2	0	
U1243	U1-10	DO YOU USE OR REFER TO ADDRESS WORDS	1	1	0	0	2	0	
U1244	U1-11	DO YOU USE OR REFER TO ADDRESS/SUBADDRESS	1	1	0	0	2	0	
U1245	U1-12	DO YOU USE OR REFER TO STEERING/INFORMATION	0	1	0	0	2	0	
U1246	U1-13	DO YOU USE OR REFER TO INFORMATION WORDS	0	1	0	0	2	0	
U1247	U1-14	DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING	1	1	0	0	2	0	
U1248	U1-15	DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING	0	0	0	0	0	0	

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	QY-TSK	SPC 001	SPC 002	SPC 003	SPC 004	SPC 005	SPC 006	
U1249	U1-16 DO YOU PERFORM TASKS ON INPUT DEVICES	0	0	0	3	0	0	
U1250	U1-17 DO YOU PERFORM TASKS ON STORAGE DEVICES	0	0	0	1	0	0	
U1251	U1-18 DO YOU PERFORM TASKS ON ARITHMETIC SECTIONS	0	0	0	3	0	0	
U1252	U1-19 DO YOU PERFORM TASKS ON CONTROL SECTIONS	0	0	0	5	0	0	
U1253	U1-20 DO YOU PERFORM TASKS ON OUTPUT DEVICES	0	0	1	1	0	0	
U1254	U1-21 DO YOU PERFORM TASKS ON POWER SUPPLIES	0	0	1	1	0	0	
U1255	U2-01 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION	79	69	87	78	86	86	
U1256	U2-02 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS	32	23	40	34	27	21	DB AND POWER RATIOS
U1257	U2-03 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS	31	23	38	33	27	21	
U1258	U2-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED NO TASKS	4	7	1	4	4	0	

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AD A046093

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFPT 90-304-222	2. GOVT ACCESSION NO. AD A046093	3. RECIPIENT'S CATALOG NUMBER N/A
4. TITLE (and Subtitle) Radio Relay Equipment Repair Career Ladder AFSC 304X0		5. TYPE OF REPORT & PERIOD COVERED FINAL February 77 - May 77 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Thomas J. O'Connor Thomas E. Ulrich		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Occupational Survey Branch USAF Occupational Measurement Center Lackland AFB, Texas 78236		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS N/A
11. CONTROLLING OFFICE NAME AND ADDRESS SAME AS ITEM 9		12. REPORT DATE 15 September 1977 13. NUMBER OF PAGES 44
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Electronic principles	Electronics
Basic electronics	Air Force training
Avionics	Teaching methods
Electronic equipment	Training
Electronic technicians	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned to Radio Relay Equipment Repair Specialty (AFSC 304X0). February through May 1977. The report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.

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This specialty has the following functions:

Installs, repairs, modifies, and maintains fixed, mobile, and transportable microwave, tropospheric scatter, and radio relay equipment; voice, digital, and telegraph muliplex equipment; signaling and termination equipment; and associated test equipment.

Installs fixed and transportable microwave, tropospheric scatter, and radio relay equipment; voice, digital and telegraph multiplex equipment; and signaling and termination equipment.

Inspects, tests, and adjusts fixed, mobile, and transportable microwave, tropospheric scatter and radio relay equipment; voice, digital, and telegraph multiplex equipment.